NEWSPAPER

COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper Second-class postage paid at Boston, Mass., and additional mailing offices

July 24, 1974 Vol. VIII, No. 30

News Update

Calif. Renegotiating IBM/Teale Contract

SACRAMENTO, Calif. – California's contract with IBM for the Stephen P. Teale Data Center is being renegotiated for fiscal 1975, owing to the budget slash imposed by the legislature, according to Ira Isbell, director of the Teale center.

Under the original plans for the center, two IBM 370/168s were to be installed, and currently the center has a dual system of a 370/165 and 168 running under ASP, he said.

Most likely there will be only one 168 running under Hasp, he explained, adding it will take about 90 days to configure the new system, which will also have fewer peripherals.

IBM is on the verge of delivering coding for the real-time portion of the system to the Department of Motor Vehicles (DMV), and estimates are that this work will be completed and running Oct. 11,

(Continued on Page 4)

FBI Examining Evidence In Mass. Crime Files Case

BOSTON – FBI experts in Washington have been requested to analyze evidence gathered in a nine-month investigation by Massachusetts State Police into allegations that a Boston private detective agency illegally purchased copies of criminal records for its clients from policemen with access to such records.

The owner of the detective firm and three since-retired state policemen, allegedly on his payroll, have been under investigation since last October for allegedly obtaining criminal history information on prospective employees for a number of retail stores who were his clients [CW, March 20].

Investigators are reported to have obtained checks and other documents which are said to have been sent to the FBI Laboratory in Washington to determine authenticity of signatures.

Massachusetts statute provides for a $5,000 fine or up to one year in jail for illegal dissemination of an individual's police record.

On the Inside This Week

Standard Benchmarks: Prototype Here?

The Department of Agriculture recently issued an RFP that has made news primarily because of its size. However, it may be more significant, according to Robert Head, who is responsible for the entire procurement effort, because of its benchmark approach which could, in concept, be applied to almost any equipment selection effort. The following article was written by the man responsible for development of the benchmark.

By Norris S. Goff
Special to Computerworld

The concept of standard benchmarks is an outgrowth of frustration – of both vendor and user – with specific benchmarks and a recognized need to evaluate each vendor's proposal fairly.

If the vendors had in their possession well-known standard programs which could satisfactorily represent the workload of any potential customer, it would not be necessary to go through the expensive conversion and debugging exercise time after time. The programs would have to be adjustable in a variety of ways to be sufficiently versatile, and would have to be trusted by both the vendors and the procuring agencies. This concept is being consciously examined by the Department of Defense [Department of the Army pamphlet 18-10-2, May 1973].

The objective of the Agricultural Stabilization and Conservation Service (ASCS) in developing its original benchmark tests was less lofty than that suggested above, and no representation is made that this particular benchmark could become a standard. Nevertheless, the approach which was taken appears to lend itself to solution of some of the problems which are encountered in the traditional approach.

The selection of benchmark programs from operational systems may be practical when existing equipment

(Continued on Page 2)

'Scare Tactics?'

135 Users 'Warned' of Non-IBM Memory

By Ronald A. Frank
and E. Drake Lundell Jr.
Of the CW Staff

Waltham, Mass.—IBM salesmen here are warning 370/135 users against installing independent memory, a move called "scare tactics" by some sources.

The warning, contained in a letter to several users, indicated the value of the 370/135 may drop and that "changes" to the system may affect reliability.

Acknowledging such letters were sent, IBM said "the letters described contain unauthorized statements in direct violation of IBM policy. That policy specifically states that disparagement, misleading statements or scare tactics are prohibited and that IBM representatives must refrain from criticizing, directly or by implication competitors, their products and services."

Two years ago IBM threatened users considering independent memory with the loss of maintenance to their systems, but agreed in a court settlement to maintain any unaltered portions of the systems with independent memory.

The letter, sent out on local IBM stationery to users, warned them that upgrading memory on the 370/135 "is a significant step. It is therefore quite important that the method of upgrading selected will insure the continued capability of the system, while enhancing its value as an investment."

In order to show off the advantages of the IBM memory compared with independent memory, the letter then invited users to take a tour of the IBM memory systems center in Burlington, VT.

The letter pointed out that a memory upgrade "absolutely requires a change" in the processor circuitry in Gate A of the 135.

"Therefore, THERE IS NO SUCH THING AS A PLUG-COMPATIBLE MEMORY," the letter added in capital letters.

However, independent manufacturers say there were no wiring changes involved with the existing circuitry, just the addition of memory protect boards to the gate.

These sources indicated the "changes" to Gate A have to be made by IBM as well as by the independents when memory is upgraded.

IBM admitted last week that "with respect to IBM [memory for the 135] you can't just plug it in; you have got to make that Gate A change."

IBM further told users the "circuitry changes" that will have to be made with independent equipment will have to be made by non-IBM customer engineers (CE).

The letter also warned that future changes to the 135 made by IBM may not be available to the user of independent memory.

"As a part of the policy of providing all users of our current systems with the benefits of the latest advance in technology, we provide you with engineering changes in the 3135 as they become available.

"These changes are transmitted in

(Continued on Page 4)

Mass. Refuses to Supply SSNs On HEW Rehabilitation Reports

By Nancy French
Of the CW Staff

BOSTON – Gov. Francis Sargent has ordered state officials here to stop giving federal agencies Social Security Number information on people involved in rehabilitation programs.

Sargent made the move to prevent the Social and Rehabilitation Service, part of the Department of Health, Education and Welfare (HEW), from sharing sensitive data collected on Massachusetts residents with the Social Security Administration or any other federal agency without their knowledge or permission.

Instructing state officials to "substitute their internal code numbers" on the reports requested by the rehabilitation service, Sargent fired off a letter to HEW Secretary Caspar Weinberger explaining the reports "threatened confidentiality" and could "potentially compromise the value of rehabilitation services."

Often Social Security Numbers are used to cross-match information from separate computerized data files, state sources said.

It is considered routine for HEW officials to require state agencies running federally funded programs to report treatment results, including name, address and Social Security Number, for use in "measuring the effectiveness of the rehabilitation program."

In this case, the reports were to be used to "track earnings records" to determine rehabilitation of the client, according to HEW deputy regional attorney Nancy Nieman.

Massachusetts state officials have long doubted the confidentiality of such re-

(Continued on Page 4)

IBM Ties 3886 Reader to CRT To Correct Nonscannable Items

By Ronald A. Frank
Of the CW Staff

WHITE PLAINS, N.Y. – IBM has upgraded the capabilities of its 3886 optical character reader to allow nonscannable characters to be displayed and corrected on a 3277 CRT.

Called the video collect feature, the 3277 must be factory-equipped with the capability to display characters or other data that has previously been scanned and digitized. When the rejected information is displayed on the screen, the operator can make the necessary corrections on the 3277 keyboard.

The video collect capability applies to both on-line and off-line models of the 3886 OCR reader and it can be used to process machine-printed fonts, handprinting and signature files. Signatures can be called up on the 3277 from a digitized file to compare with an actual handwritten signature, but the system can handle only graphics that are one third of an inch in height, so normal signatures might have to be photographically reduced before being scanned and entered

(Continued on Page 2)

COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY
TM Reg. U.S. Pat. Off.

EDITORIAL
Editor — E. Drake Lundell Jr.
Associate Editor/Technical News — Ronald A. Frank
Hardware Editor — Victor J. Farmer
Software Editor — Donald Leavitt
Assistant Editor/ Computer Industry — Molly Upton
Staff Writers — Nancy French, Edith Holmes, Patrick G. Ward, Toni Wiseman
Chief Copy Editor — Judith Kramer
Copy Editors — Jesse R. Victor, Cheryl M. Gelb
Photography Editor — Leslie Flanagan
Bureaus:
West Coast — Marvin Smalheiser
Europe — J.H. Bonnett
Asia — Hidetsuna Sasaki
Contributors:
Education — J. Daniel Couger
Taylor Reports/Professional Practices — Alan Taylor
Vice-President/Editorial Services — Edward J. Bride

SALES
Vice-President/Marketing — T. Neal Wilder
Sales Administrator — Dorothy Travis
Traffic Manager — Judy Milford
Classified Advertising — Sara Steets
Market Research — Kathryn V. Dinneen

CIRCULATION
Vice-President/ Circulation — Margaret Phelan
Assistant Manager — Barbara Jeannetti

PRODUCTION
Manager — Leete Doty
Supervisor — Henry Fling

Please address all correspondence to the appropriate department at 797 Washington Street, Newton, Mass. 02160. Phone: (617) 965-5800. Telex: 92-2529.

OTHER EDITORIAL OFFICES: Los Angeles: 963 N. Edgecliffe Drive, Los Angeles, Calif. 90026. Phone: (213) 665-6008. Europe: Computerworld, c/o IDC Europa, Ltd., 140-146 Camden Street, London NW1 9PF, England. Phone: (01) 485-2248/9. Asia: Computerworld, c/o Dempa/Computerworld Company, Dempa Building, 1-11-15, Higaski Gotanda 1-chome, Shinagawa-ku, Tokyo 141. Phone: (03) 445-6101. Telex: 26792.

Second-class postage paid at Boston, Mass., and additional mailing offices. Published weekly (except: a single combined issue for the last week in December and the first week in January) by Computerworld, Inc., 797 Washington St., Newton, Mass. 02160.

50 cents a copy; $12 a year in the U.S.; $13 a year in Canada; all other foreign, $36 a year. Four weeks notice required for change of address.

Computerworld can be purchased on 35mm microfilm in half-volumes (six-month periods) through University Microfilm, Periodical Entry Dept., 300 Zeeb Rd., Ann Arbor, Mich. 48106. Phone: (313) 761-4700.

COMPUTERWORLD, INC.
President/Publisher — Patrick J. McGovern
Executive Vice-President — W. Walter Boyd
Vice-Presidents — Edward J. Bride, Margaret Phelan, T. Neal Wilder
Editorial Director — Dr. H.R.J. Grosch

ABC ABP AIA

POSTMASTER: Send Form 3579 (Change of Address) to Computerworld Circulation Department, 797 Washington Street, Newton, Massachusetts 02160.

Standard Benchmark Must Be Adjustable

(Continued from Page 1)

is to be replaced without major software design changes. However, these conditions did not apply to ASCS, which is automating many applications for the first time and redesigning others from batched to on-line processing. The use of existing programs as a benchmark was not realistic.

Analysis of requirements had identified more than 600 automated tasks in the operational system. A mathematical quantification model was constructed which provided actual historical workload, on a biweekly basis, for each of these tasks, though they were not yet automated.

The worst-case total biweekly workload for all tasks was determined, based on system loading factors provided by the model. Thus, data were available to be translated into computer requirements, but there were no operational programs to use in causing the corresponding workload to be imposed on a proposed system.

Analysis of the 600 automated task definitions indicated they could be categorized into a small number of sets, where a set has relatively consistent data accessing characteristics. This factor is considered important because data accessing is expected to constitute the primary system performance constraint.

Twelve such categories were identified, and it was decided to construct a benchmark program corresponding to each category. The intent was to represent the common element, data accessing, as accurately as possible.

Study was made of the task definitions comprising each category to determine the characteristics of data access for each, that is, the number of indexing operations required, etc., per transaction. These characteristics were built into the corresponding programs.

A further objective of the benchmark programs was to provide the ability to respond to aggregate changes in workload projections through several variables, with the means to adjust each of the variables independently. The variables are:

- The CPU workload presented by the benchmark programs.
- Program size.
- Direct-access storage requirements.
- Rate of accesses to direct-access storage devices and other peripheral equipment.
- Volume and rate of inputs.

It is through adjustments to these variables that the resultant benchmark programs have survived the significant changes in procurement planning. This includes expansion of the original specifications for one center, to serve the needs of the ASCS, to four centers which will handle the workload of all Deparment of Agriculture agencies.

CPU workload is controlled by a subroutine which is included in each synthetic program. The subroutine contains a sequence of instructions which approximates a Gibson Mix. A counter controls the number of iterations through the sequence. The counters in all synthetic programs must be set with consideration of the number of times they will be executed during the timed run, which in turn is a function of the number of inputs.

Program size is controlled by adjustment of a data array included in the subroutine discussed above. The entire array is accessed as the Gibson sequence is executed.

Direct-access storage requirements could be controlled by varying the data volume to be supplied to the vendors. However, only a relatively small portion of the total data volume is supplied. Therefore, the requirement can be restated by changing the multiple to be applied to the volume supplied.

The rate of data accessing was a principal factor used in designing the synthetic programs. However, the rate can be adjusted by controlling the number of "hits" per input transaction.

For example, assume a program which simulates on-line data retrieval, with data and transaction keys regulated so there are three matching data base records on the average per transaction. The accessing rate requirement could be increased by making this ratio four to one.

The volume and rate of input is controlled by the number of on-line and batched transactions input during the benchmark run and by the number of executions of the same batch programs. If this parameter alone is to be adjusted, compensating adjustments must be made for CPU time and data accessing rate.

Finally, a postprocessor was provided to summarize the results of the timed benchmark run. The summary consisted of a printed line per input transaction type, giving the number of incidences, and hash totals. If the benchmark operates correctly, this listing should agree with predetermined controls.

Keypunch Error Pays Off

NIAGARA FALLS, N.Y. – A mistake by a keypunch operator here recently resulted in about 10 Western Region Off Track Betting Corp. (WROTB) customers collecting $114 each on tickets that had not won on opening day.

The wrong numbers for the daily double combination flashed across the boards at branch offices of WROTB and remained posted for about 15 minutes.

A WROTB worker explained the foul-up as "opening day butterflies."

Most of the workers were trainees with very little experience, he explained, and a keypunch operator used the track number for a horse rather than the code number OTB uses.

IBM Upgrades 3886 OCR Reader

(Continued from Page 1)

into the file, an IBM spokesman said.

Video-collected data can be transferred directly from a 3886 reader to a 370 with user-written programs that are written as normal I/O statements and compiled on the mainframe. The data can also be transferred to a magnetic tape on a 3410 tape system for later storage and/or display on the 3277. A stand-alone video collect capability is also available through a cable which attaches the CRT to the reader.

Each video collect feature requires two 8K segments of additional instruction storage in the 3886 and each increment costs $120/mo under monthly availability charge (MAC), $102/mo under Extended Term Plan (ETP) or $4,690 purchase. Additional data storage for complex character shapes may also be required at $24/mo, MAC; $20/mo, ETP; or $938 purchase. The cable attachment costs $118/mo, MAC; $100/mo, ETP; and $4,600 purchase.

Prices for the expanded 3886 will range from $224/mo to $324/mo under ETP or $264/mo to $382/mo under MAC. Purchase price for the reader will range from $10,318 to $14,918.

The specially equipped 3277 costs $125/mo under MAC or $5,625. The CRT is not available under ETP.

3881 Diskette

IBM also introduced a diskette storage capability for the 3881 optical mark reader. This allows data read on the 3881 to be stored on a diskette and later processed, edited and reformatted on the 3740 data entry system.

The diskette can be attached to either the on-line Model 1 or the off-line Model 2 versions of the 3881. The reader with the diskette is called the Model 3 and costs $1,360/mo under ETP, $1,598/mo under MAC or $66,000 purchase.

A field modification to upgrade a purchased Model 2 into a Model 3 costs $14,600, and an upgrade of a Model 1 into a Model 3 costs $9,500, IBM said.

The 3886 runs on virtual 370s operating under DOS/VS, OS/VS1 or OS/VS2. The 3881 operates on the System/3 models 10 and 15 and on the 370/115 through 158 under DOS/VS. First deliveries of all the capabilities will begin in the fourth quarter of this year.

T/S Users Disillusioned

Univac 1110 Memory Replaced

Hardware Problems Hamper ASU's Consolidation Plan

By Edith Holmes
Of the CW Staff

PHOENIX – A string of different hardware problems has hit Arizona State University's (ASU) sole computer, a Univac 1110, compounding problems facing the computer center and user departments as they make the transition to a consolidated system.

Frequent, brief down periods experienced ever since heavy usage of the computer began last September have forced Univac analysts to completely replace the memory of the 1110.

"Inconsistency of hardware failures on the computer has made the identification of a specific solution difficult for Univac," commented Dr. Nelson Garrison, director of campus computer services. But while brief downs don't greatly affect batch users, "the frequent blinks of terminal eyes cause the entire computer system to lose credibility in the sight of students and faculty," he said.

To be effective, time-sharing requires the system to be up 99% of the time, Garrison said. "Conditions were deplorable" until April when Univac began paying attention to the problems and the system started operating 96% of the scheduled time, he noted.

Jim Fullam, vice-president for Univac's market development, acknowledged the hardware difficulties experienced by ASU. "We're particularly concerned because this kind of installation brings us into contact with so many different kinds of users, and judging from its coverage, the local press hasn't understood the nature of the problems ASU and Univac have been having," he remarked.

"We've had a team of analysts out there for some time now and have been tracking their progress at our home office," he said. "We think we have the problem isolated to some area of memory."

Fullam said new memory, tested at the factory before shipment to Arizona, was moved into the computer over the weekend in an effort to provide a minimum of interference to university schedules.

"ASU is one of our first users of the 1110," he commented, "and we haven't encountered these erratic hardware problems at other installations." At this point, Fullam expects the exchange of memory to solve these problems, permitting satisfactory time-sharing usage at ASU before the end of the fall semester.

Dirty Linen

ASU's DP problems came to public attention when users aired their complaints at an open meeting held before a special faculty senate committee the second week in June, Garrison commented. Appointed to investigate the difficulties, the committee heard a variety of user grievances.

These included not only dissatisfaction with the considerable downtime resulting from hardware problems, but demands for additions to the two terminal centers presently linking user departments to the 1110 as well.

Much user discontent can be attributed to changes in every operation brought about by ASU's consolidation last year of six computing centers into one, according to Dr. Joe Rue, chairman of the computer users committee and associate professor of business administration.

Since the single center was established, Rue's committee has heard numerous remarks such as, "Before I had my own terminal . . . now I have to walk across campus to gain access to the computer." He also described the acquisition of new equipment which used CRTs heavily as a kind of "cultural shock" for users familiar with teletypewriters.

Rue suggested these kinds of inconveniences particularly affected the DP procedures of the administration. "When they had two computers of their own, processing during the day shift proved no problem."

But with the switch to a central computer, it became impractical to occupy such valuable computing time with batch processing. The administration had begun to complete its work during off hours, he said, but since the meeting, administrative officials understand it's now policy for them to use the computer during off times.

On the whole, Rue considered the cooperation received from ASU people in converting all student, research and administrative processing to one computer a credit to the university and attributed the primary difficulties of the system to Univac.

More Terminals

In meeting user needs, Garrison's center and its comparable software department accepted several user committee recommendations. For example, 25 more terminals will be added to the existing network before the fall term in an effort to bring computer facilities closer to users.

These will be located in three additional terminal centers, geographically dispersed throughout the university, he said. To further answer user requests, the new terminals will be a mixture of hard-copy devices and CRTs.

"We are acting on the assumption that our Univac 1110 will be sufficiently stabilized by the fall semester to handle our time-sharing users," Garrison remarked.

If not, his center may have to go elsewhere to satisfy its time-sharing needs. One proposal under consideration involves the acquisition of one or more minicomputers to coordinate the time-sharing computing most frequently used by students and faculty.

Project to Coordinate City's Social Services

EAST LANSING, Mich. – Two Michigan State University (MSU) graduate students in psychology have been chosen as recipients of a National Science Foundation grant to generate a more effective computer system for coordinating services of 99 units of the metropolitan Lansing social service agencies.

The grant, amounting to $13,290, will finance the proposal submitted by William B. Bowman and Bruce H. Ente

The interdisciplinary project will involve an analysis of interagency organizational lines, classification of information flow patterns among the agencies, a computer modeling of existing systems and a design for a fully coordinated system.

Ford on Privacy Trail

WASHINGTON, D.C. –"One of the most serious problems we face today is insuring personal privacy in a computerized society which threatens to open the most personal affairs of each of us to anyone with access to computer-stored information," Vice President Gerald R. Ford told a meeting of the National Broadcast Editorial Association here recently.

Explaining the issue of Fednet, Ford praised his committee – the Domestic Council Committee on the Right of Privacy – for its efforts to control and "apply guidelines" for Fednet.

Ford also said the "wired society" was of serious concern to him.

"Cable TV is now so widespread we have to start thinking about ways to prevent electronic snooping so that information about you as a cable subscriber, or about the services you are getting, does not get siphoned off for misuse."

Ford called upon the broadcast editorial writers to "alert citizens to the possible dangers they face."

Mass. Defies HEW's Request for SSNs

(Continued from Page 1)

ports once in the hands of federal officials, and Sargent has taken a personal stand on the need to protect privacy of the state's citizens – especially those involved in programs such as rehabilitation.

"Individuals suffering from disabilities that have a social stigma attached, such as 'drug addiction' or 'alcoholism,' could suffer needlessly if this information is widely recorded and accessible," Sargent said.

An administrative dispute ensued between Massachusetts and HEW officials over what or how much client information would be provided by the state government, according to Andrew Klein, a staff member in the governor's office.

When it was nearly agreed that the state would provide the treatment data requested, identifying cases with internal state code numbers, state rehabilitation commissioner Russell O'Connell was informed by memo that this wouldn't do because the Social Security Numbers were needed by the Social Security Administration.

"The Social Security Numbers were needed to link up these reports with information already in the Social Security Administration's data bank for a follow-on study," Klein said.

This revelation was the final straw that resulted in the governor's decision and letter to Weinberger.

A Social and Rehabilitation Service official defended sharing data with the Social Security Administration saying the data would be protected by "the rule of five" and aggregated to make it impossible to identify any individual.

According to Klein, the rule of five means sensitive information will be made available only when aggregated for at least five persons in a given locale or situation.

Apparently unimpressed with the proposed privacy safeguard, the governor directed O'Connell not to comply.

Others Urged to Join

Although Massachusetts is the only state to take this action to protect personal privacy and rights of the individuals in rehabilitation programs, Sargent urged other concerned states to follow suit and predicted that no federal rehabilitation funds would be jeopardized.

Failure to provide the data requested as part of the administration of a federal program might be considered noncompliance.

If so, Nieman explained, a "hearing would be held with a possible loss of funds."

This issue apparently revolves around the question of whether the request for information has "the force of law."

No official interpretation has yet been made, according to Nieman.

The Commonwealth receives about $20 million in federal rehabilitation funds.

Massachusetts rehabilitation records indicate approximately 20,000 Massachusetts residents would be affected by the federal reporting requirement.

IBM Warns 135 Users Of Non-IBM Memory

(Continued from Page 1)

floppy disk. However, they are written to apply to a system only so far as the circuitry remains in accord with the way it was designed by IBM. Thus, if you upgraded with non-IBM memory, depending upon the circuitry changes made by the non-IBM CE, engineering changes applied *might* apply to your first 96K. However, they will not apply to your non-IBM memory," the letter stated.

"You would, therefore, at least lose the benefit of future IBM engineering changes on the non-IBM portion of your memory," it added.

Independent manufacturers basically agreed with the statement, but indicated it could be misleading since circuitry changes to the CPU naturally would not apply to the memory.

And they said users would receive all the advantages of nonmemory engineering changes even if they had independent memory attached.

The letter ended with two points for users to ponder:

"Finally, there are two additional considerations which must be taken into account when considering the purchase of an upgrade with non-IBM memory. 1) Will the circuitry changes required affect your ability to upgrade with IBM memory at some later time? 2) The addition of non-IBM memory will give your system two different types of memory and it will therefore force you and all future owners to deal with two different vendors for maintenance of the 3135 memory. This may affect the resale value of your 3135."

However, an IBM spokeswoman admitted "there is no way for IBM to know if the value will increase or decrease" with the addition of independent memory.

In addition, the spokeswoman noted "there are no instances known" where the addition of non-IBM memory has affected the ability of a user to later add IBM memory.

Calif. Renegotiating IBM/Teale Contract

(Continued from Page 1)

he said. Under the terms of the original contract, the system was to have been completed July 1.

The legislature, which will reconvene in August, last month cut the budget for the Teale center to $11.5 million, less than half the scheduled $23.5 million. In so doing, the state cut $7.9 million out of funds scheduled to go to IBM next year, sources said.

It is unclear whether the state will bring action against IBM for failure to meet the terms of the contract, or whether IBM will bring action against the state because of its drastic budget restructuring.

The DMV, which was given a budget separate from the Teale center, was allowed to upgrade its Univac equipment without competitive bids, sources said.

'Criminal History File' Keeps Track of Jockeys' Violations

By Patrick Ward
Of the CW Staff

LEXINGTON, Ky. – If a jockey loses his license in New York, he may soon find racing commissions across North America know the reason for his suspension and how long it is to last.

Last month, the National Association of State Racing Commissioners (NASRC) created its own "criminal history file," and the system already contains all racing commission rulings against personnel from January on, noted Warren D. Schweder, NASRC executive vice-president.

Once local commissions get their teletypewriters or portable terminals installed, Schweder expects about a dozen of the racing authorities to begin accessing the file to check into the history of individuals who want to work on tracks in their areas.

The commissions will probably be familiar with the records of 95% of the individuals who want to work on local tracks, Schweder observed, but will be able to use the system to determine if new people are who they say they are.

Most inquiries will probably come during the licensing process in each state, Schweder mentioned. He did not venture to predict an average level of inquiries.

The computerized system may also provide the first real census of how many people the nomadic horse racing industry employs at the tracks, Schweder noted, since NASRC has plans to list all racing licensees throughout the country – possibly 200,000 individuals in thoroughbred, harness and quarterhorse racing.

Eventually this will be merged with the existing personnel rulings file to create one file which racing commissions will be able to access through a person's name, Social Security Number, federal racing identification number or state racing commission number.

Deterrent

The system will also provide for known aliases, and its deterrent value should be one of its chief advantages, Schweder said.

"If each state apprehends one . . . shady character in a season," he commented, the system will have been worth its cost to the local racing commission.

The NASRC system stores only information on the public record, Schweder stressed. The automated approach just makes finding the information "quicker and more dependable."

Information in the personnel rulings file runs the gamut from "doping a horse . . . to parking a car in the wrong place," said Jim Hodges, executive vice-president of Bloodstock Research Information Systems, which designed and programmed the system.

The central processor is a Digital Equipment Corp. (DEC) PDP-11/45 running under the RSTS time-sharing system, Hodges said.

There are three 1M-byte disk drives, magnetic tape units and a line printer, Hodges said. The racing commissions currently mail in their personnel rulings and these are entered through a DEC CRT, he added.

NASRC currently uses the system to print out a personnel rulings bulletin that is mailed out with a newsletter twice a week.

State and provincial racing commissions will pay for the system's data storage on a prorated basis depending on the area's racing revenue. Individual users will also bear the cost of connect time, terminal leases and line charges. The average user's bill should come to about $400/mo, Schweder estimated.

Dating Firm Sued

LOS ANGELES – A computer dating firm which advertises dates with "good looking winners" has been charged with fixing up clients with "fat, ugly and unsuccessful people."

The State of California has filed a suit against the firm for misleading business practices.

Support Lacking for CIA User Group Plan

CW West Coast Bureau

LOS ANGELES – The proposal for an independent Computer Users Association has drawn some preliminary inquiries since it was suggested in May [CW, May 15], but widespread support has not yet surfaced.

Jack Biddle, executive director of the Computer Industry Association (CIA), which made the proposal, said he had about five calls from people who said they felt qualified to head up such a new user group.

Biddle said they were asked to submit proposals to the CIA, which called for the formation of the new user group at the National Computer Conference.

The CIA said it would offer $50,000 cash "with no strings attached" to help a broad-based computer users association get organized.

It was suggested that another $100,000 total from at least two other sources would be needed at the outset, but Biddle said no other offers of funds have been received.

In response to a letter seeking its participation, the Computer and Business Equipment Manufacturers Association said it didn't think the group was a necessary undertaking.

Biddle said other organizations will be contacted but he added, "We don't want it to appear that it is our thing. We made our offer and we stand behind it.

"We are not going to cram a user association down anyone's throat."

Biddle said he is optimistic about the proposal, but "it may take time for users to face up to the fact that contrary to their present beliefs, some manufacturers are not speaking up for what is in the users' best interest on important policy matters.

"We are looking for the users to pick up the ball and recognize how very much they need a voice in important matters facing the industry."

Operating Behavior Predicted

System Monitors Reactor's Nuclear Fuel Consumption

GREEN BAY, Wis. – Monitoring the consumption of nuclear fuel within a nuclear reactor is not a textbook inventory control problem but rather a complex management and planning task – "an ideal application for a computer," according to Edwin D. Novak, nuclear fuel supervisor, Wisconsin Public Service Corp.

Unlike fossil fuel which burns itself in a sustained burst of energy, nuclear fuel by its very nature depletes in a pattern governed by the laws of nuclear physics and requires round-the-clock monitoring to assure safe, economical operation.

At the new Kewaunee Nuclear Power Plant, about 30 miles east of Green Bay, an IBM 370/145 computer is being used to follow the reactor fuel load status continuously over time, so the utility can predict reactor responses to any hypothetical set of reactor operating conditions, Novak explained.

"We can both maintain the reactor within its technical limits and achieve fuel economies," he said.

Determines Conditions

"Working with the reactor core model, the computer can identify every cubic centimeter of the reactor core area and can determine conditions in any portion of the reactor."

The computer can predict specified power load and duration for any specified set of operating circumstances, Novak added.

To verify core model conditions, in-core instrumentations allow periodic readings to be taken inside the 540,000 net kilowatt pressurized water reactor. These are supplemented by readings from larger detectors outside the reactor core.

Readings are reduced and stored on magnetic disk for future use.

More than two dozen computer programs have been written, adopted or adapted by the corporation's fuel management team to control and optimize the Kewaunee reactor's fuel performance, according to the supervisor.

"Many of these programs enable us to perform analyses for in-core fuel management, such as burn-up, reactivity, power distribution and depletion distribution. In addition, we can analyse specific characteristics of the in-core fuel – detailed temperature distributions, fuel clad stress conditions and the like," Novak said.

Other programs enable the fuel management team to perform out-of-core fuel analyses. These include replenishment cycle lengths, individual fuel assembly enrichment requirements and quality assurance inspections, for example.

"One specific program provides a dollar flow description of our fuel cycle contracts, including the escalated costs, dates of payment and total costs for each fuel batch from uranium purchase through enrichment, fabrication, reprocessing and salvage," Novak said.

The task of monitoring nuclear fuel supply with the computer is entrusted to a four-man team, according to Novak – two nuclear reactor physicists, a mathematician with reactor analysis training and an electrical engineer with computer expertise.

The reactor fuel load consists of 121 separate nuclear fuel assemblies, arranged in a checkerboard pattern to optimize nuclear fission.

Inside each nuclear fuel assembly is a grouping of 169 zirconium alloy fuel rods, and inside each of the 12-foot-long fuel rods are 240 small pellets of enriched uranium. Every cylindrical uranium pellet has the energy potential of 1,780 pounds of coal.

A complete fuel assembly contains enough uranium to generate 93 million kilowatt-hours of electricity.

To Control Uranium

This uranium mass must be controlled with extremely tight tolerances and maintained in delicate fissionable balance if the nuclear plant is to operate efficiently and economically, Novak said. Control is achieved by either raising or lowering control rods, intermixed with the nuclear fuel assemblies, to either speed up or slow down respectively the fission rate.

Novak explained that fuel replacement is complicated by the fact that the different fuel batches within the reactor are not interchangeable but rather "have different degrees of uranium enrichment," so fuel replacement is not a case of merely maintaining inventory as in the case of a bin full of coal or a tank full of oil.

Added to that is the long lead time required to replace each batch due to the time-consuming refinement procedure needed to make the uranium ore suitable as fuel.

"First, the ore must be milled and refined into yellowcake. The yellowcake then undergoes an isotope separation process in order to increase the concentration of fissionable uranium-235 to desired levels. This enriched uranium then must be fabricated into fuel pellets, the pellets enclosed in fuel rods, and the fuel rods grouped into fuel assemblies," Novak explained.

From start to finish, the manufacturing process takes upwards of a year, Novak said.

In addition to fuel management, the IBM 370/145 handles normal utility DP chores including customer billing, inventory control and engineering and accounting computation.

The Kewaunee Plant – built by Wisconsin Public Service and jointly owned by that company, Wisconsin Power and Light Co. and Madison Gas and Electric Co. – has a reactor system capable of meeting the total electrical power needs of four cities the size of Green Bay. The plant, which went on full power this spring, increases by one third the power-generating capacity of its owner utilities.

Edwin Novak demonstrates replicas of uranium fuel pellets enclosed in the fuel rods that power the Kewaunee nuclear reactor.

Workbooks, Audio-Visuals Ease Scheduling Burden

By Edith Holmes
Of the CW Staff

SUNNYVALE, Calif. – Any user who has ever tried to take 10 or 20 people away from their work long enough to teach them something about their company's data processing knows what a serious scheduling problem it can be.

At Lockheed Missiles and Space Co. here, workbooks and audio-visuals developed by Edutronic Systems International, Inc. help ease the burden of introducing new employees to and updating experienced personnel in DP techniques, according to Lloyd Robblin, training director, administrative systems programming for the company.

Since November of last year, the company has used Edutronics materials to train programmers and programmer/analysts for its staff of 140 in the commercial applications programming area. When enough people can't be found who need and can spare the time for training at a particular level, individuals can work through films and workbooks on their own, calling on nine senior programmer/analysts for assistance when necessary, Robblin explained.

He said training at Lockheed is divided into two programs. The first, a "training-in" program, is conducted in-house and actually comprises part of the company's recruiting efforts.

Professional Development

This combined training/screening program is advertised once each year to Lockheed's some 20,000 employees, Robblin said. Open to people with two years of college, the plan calls for about 25 candidates to be selected through interviews of an average of 60 applicants.

Once selected, candidates attend an introduction to data processing using Cobol as a base language for three hours a week for 16 weeks. Robblin said candidates come to school on their own time.

Performance on weekly quizzes and exercises determines the ranking of students in the class. Those ranking highest are then brought into Lockheed's programming department as the need for personnel arises, he noted.

Twenty-three films are incorporated into this introductory course as lecture supports. These include an introductory film, "The Color Computer," in addition to movies on flow-charting, computers and imagination, computers and logic, basic file techniques, sequential files, language structures and Cobol.

Don't Forget Old-Timers

While "the meat of this course is problem-solving using flow-charting," Robblin said Lockheed's second ongoing training program is designed for senior staff updating and review. Also in-house, this program depends on a library of 40 additional Edutronics modules.

In contrast with the formal structure of the "recruiting class," the atmosphere of the ongoing program is generally informal, he remarked. But within the program, several individual courses, such as the auto-test class describing test data used in a simulated environment, depend on formal lectures.

In addition to Edutronics materials, Lockheed's Information Processing Division has devised its own comprehensive training exercises, Robblin said. He added that programmers are occasionally sent off-site to various vendor courses. Prominent among these are IBM programs, since Lockheed uses much IBM equipment.

While Robblin would not estimate the cost of his company's training effort, he said Lockheed is "quite satisfied" with the Edutronics films and workbooks. By mid-July, the company had held 1,239 individual viewings of the films, and of these showings, over 1,000 students rated the product from good to excellent.

He noted only about 100 considered the films fair to worthless, and another 100 or so were noncommittal. Students ranged from experienced programmers to members of the recruiting class.

Benefits derived are primarily evaluated by project leaders who personally observe the progress of five to seven students, Robblin commented.

School Days

The following is a sampling of public seminars and workshops scheduled during the next two months. When two prices are shown, the first is for members of the sponsoring organization, the second for nonmembers.

Aug. 12-16 – **Design of Computer Systems for Military and Industrial Training**; Los Angeles; $325; University of Southern California (USC), Continuing Engineering Education, Powell Hall 212, University Park, Los Angeles, Calif. 90007.

Aug. 14-16 – **Computer Operations Management**; New York; $395; Institute for Advance Technology (IAT), 6003 Executive Blvd., Rockville, Md. 20852.

Aug. 19-21 – **The Data Network Design Course**; New York*; $465/$525; American Management Association (AMA), 135 W. 50th St., New York, N.Y. 10020.

Aug. 19-21 – **Developing Microfilm Information Systems**; New York*; $390/$440; AMA.

Aug. 19-23 – **Simscript II.5 Modeling and Programming**; Washington, D.C.*; $475; Consolidated Analysis Centers, Inc., 12011 San Vicente Blvd., Los Angeles, Calif. 90049.

Aug. 19-23 – **Computer Program Management Techniques and Applications**; Los Angeles; $355; UCLA Extension, Dept. K, P.O. Box 24901, Los Angeles, Calif. 90024.

Aug. 19-23 – **Seminars on Intel Microprocessors**; Framingham, Mass.; $125-$325, depending on number of days attending; Microcomputer Technique, Inc., 11227 Handlebar Road, Reston, Va. 22091.

Aug. 23 – **Computer Security and the Auditor's Responsibility**; Hershey, Pa.; $100; Pennsylvania Institute of CPAs; 1100 Lewis Tower Bldg., Philadelphia, Pa. 19102.

Aug. 26-30 – **Computer Applications in Medical Practice: A Guided Tour**; Los Angeles; $375; USC.

Aug. 28-30 – **Microfilm Information Systems**; Washington, D.C.*; $395; IAT.

Sept. 9-11 – **Advanced Programming Techniques**; Washington, D.C.*; $395; IAT.

Sept. 9-13 – **Fundamental Concepts in Computer Science**; Providence, R.I.; $250; Office of Summer and Special Programs, Box 1849, Brown University, Providence, R.I. 02912.

*Scheduled for other cities later.

Editorials

Time to Bury CCH

It is time to reevaluate the entire concept behind the FBI's Computerized Criminal History (CCH) system.

Born in controversy and nurtured by bureaucratic in-fighting, the CCH system apparently is not fulfilling any great need in the criminal justice community today.

New York has been kicked out of the system because it did not want to spend the money to update the criminal histories on file; Pennsylvania has dropped out for economic reasons. Other states say they would like to join CCH, but only if the Federal Government foots most of the bill for their participation.

If the system were truly of great benefit to the law enforcement community and others in the criminal justice area, many would be flocking to the system, even if they had to pay for it themselves.

The unwillingness of 48 states in the Union to pay for the system demonstrates that it is not needed.

Yet at the same time, the CCH file, with hundreds of thousands of raw arrest records, often without dispositions, holds great potential for abuses of personal privacy and freedom.

If the system truly served some pressing purpose, it might be worth the risk. But as it is, the present system should be eliminated.

It was wrong for CCH to be tacked onto the National Crime Information Center operations in the first place.

By eliminating CCH now, responsible members of the criminal justice community can take a close look at their needs for criminal history information and perhaps come up with a system that does not hold such wide potential for abuse.

Be a Wise Lessee

Recent stories citing user problems with third-party leases should not scare users out of such arrangements, but rather be taken as a warning that all leasing deals need careful investigation.

In all the cases reported [CW, July 10, 17], the users could have saved themselves significant headaches by carefully negotiating the leases and insisting on ironclad contract terms.

Third-party leasing is one major way users can save on their monthly data processing bills and should be used by more to reduce costs and improve price/performance.

But as in any major contract, users need good legal advice on any proposal and they must ensure they get the equipment they order at the agreed-upon price.

Turn On the Light

Once again it appears that more heat than light is coming from the New York court where the pretrial rounds of the government's massive antitrust suit against IBM are being held.

IBM continues to file motions – ranging from the trivial to the serious – leading to government charges that the IBM moves serve solely to harass the Justice Department in its preparation of the case.

Meanwhile, the Oct. 7 starting date for the trial appears more and more unlikely, except for the determination of Judge David Edelstein to start the trial on that date.

The case has been in pretrial stage for five and one-half years now, and both sides can be blamed for the long delay in its preparation.

That's long enough.

Hopefully, Edelstein will be able to act quickly on the serious IBM charges against the government and throw the trivial motions out of court. Hopefully, also, the two sides will be prepared to begin the trial as presently scheduled.

'Your Honor, as Soon as the Government Can Define the Market Areas of the Suit, We Will Gladly Give Said Government the Documents It Needs to Define These Areas!'

Letters to the Editor

OS Routines Should Be Expanded To Determine Extent of Dumps

In a previous letter [CW, June 26] I suggested an improvement to the IBM OS dump so "the routine that terminates a program" (i.e., issues the ABEND macro) could also "determine the extent of the dump." William Salmi [CW, July 10] has, therefore, misinterpreted my letter to read much more into it than was actually there.

First, whether a dump will result is now determined by the routine that terminates a program. I would like to see this expanded so the extent of the dump is determined as well, instead of having to juggle SYSABEND and SYSUDUMP control cards as is now required.

Second, the ability to "get all pertinent information (but no more)" is not as difficult as Salmi seems to think. The IBM OS dump is already smart enough to snap out not the entire region or partition but only those locations currently in use.

Third, it would not require a trace with interpretive execution to make the IBM OS dump even smarter. For example, an operation exception should normally result only in a dump of the user program. But if an operation exception occurs in the operating system (e.g., during OPEN's transient module execution – P65293), then it would be smart to include the operating system in the dump as well, since the problem may not be duplicated in the rerun.

Alternately, if an error is the result of invalid information in a DCB, such as one of the various types grouped under the 013 system completion code (whose documentation in GC28-6631 sets a high standard for other areas), then only the relevant control blocks ought to be included in the dump.

Last, I would also like to see the dump's productivity improved to save paper and machine resources by including 12 words per print line instead of the eight words now given; all that is needed is to drop the rightmost column that contains redundant data and add four more words.

I look forward to any other comments from readers if they disagree with the above.

R.A. Sobieraj

Perth Amboy, N.J.

User to Blame for Leasing Woes

The headline "Third-Party Lessee Left System-less" in the July 10 issue casts a slur (no doubt unintentional) on third-party lessors.

Where is the lessee?

Answer: There isn't any and there never was. The headline's implication is that this computer user was abandoned by a third-party lessor, when in fact there never was a lease at all.

If he had contacted any responsible member of the third-party leasing community – and if his credit rating is strong enough – this user would have been told either that his budgeted $29,000/mo was a realistic figure for a 370/158, in which case there would have been no problem if he had proceeded to sign a lease on those terms; or that it was unrealistic, in which case the problem would have been apparent long before the computer hit the loading dock.

The user might even have been told something even more important: that he could easily afford all the computer capability he needed if he weren't hung up on having "this year's model."

No, tight money isn't the culprit. The real problem is an all-too-frequent insistence by the user on spending far more money than necessary to get the level of performance he needs. Case in point: for this particular user's budgeted $29,000/mo, we could give him substantially more performance than his 158 ever will.

So it goes, when users buy "reality" and "mental energy" instead of computer power.

On the bright side, we applaud the article "This User Couldn't Be Happier With Third-Party Deal."

Now if only that story had been on Page 1!

Arthur F. Phinney
Senior Vice-President

Computer Leasing Co.
Arlington, Va.

Third-Party Deals Available

The article "Third-Party Lessee Left System-less" by Ronald A. Frank accurately described the general state of the market for the leasing of IBM 370 computers; however, our company recently completed several transactions approximating the monthly rental rate budgeted by the company in the article. (About half of these lessees came to our attention after the originally selected third-party lessor was unable to provide financing.)

The common characteristics of the third-party lessors still providing attractive lease rentals are the utilization of "leverage" via tax shelter-motivated investors, reliance on non-recourse borrowing reflecting the lessee's creditworthiness and funding by banks inactive in the current high-interest-rate money markets.

Jon J. Prager
Vice-President of Finance

Finalco, Inc.
Arlington, Va.

Grosch Explanation Doesn't Fly

I was amazed to see in Herb Grosch's column that I had run him out of CEIR for telling me Stretch wouldn't fly [CW, July 3]. This is news to me.

I am sure Grosch knows quite well why he had to part company with CEIR. Apparently the superego is causing unconscious repression and playing him tricks.

I hope it is only in this specific instance and not a general malady!

Herbert W. Robinson

Washington, D.C.

Clock Is Racing While Action on Privacy Laws Drags

By Robert L. Patrick
Special to Computerworld

The Willis Ware privacy report for the Department of Health, Education and Welfare's Committee on Automated Personal Data Systems stated we need some privacy and there are no laws on the books to guarantee it, so he proposed some laws. Had I been chairman of the committee, I would have put all that in the introduction and concentrated on the problems of combining data bases and how to control those combinations for the benefit of society while protecting the individual.

My main concern is that of time. It took about 18 months for the Ware report to get published, it was published last July, and now it's 12 months later and nothing material has happened. That's two and one-half years.

The Fair Credit Act was debated for about a year and passed in 1971, and in 1974 the Federal Trade Commission (FTC) is wringing its hands because it's not working. The FTC is trying to figure out whether to bring suit, negotiate or just turn over and die rather than face down the credit industry.

The FTC supposedly acts as an appeals board for the individual and an enforcer of the law, but the FTC is so ponderous, bureaucratic and red-tape-ridden that it demands advertisers stop false and misleading advertising months after the advertisers have given up the ad campaign because it no longer has any appeal to the public.

My contacts with FTC on credit data bases indicate it doesn't have the technical expertise to understand the issues and enforce the law.

Let's also consider the track record of the Federal Bank Reporting Act. It was passed in 1970, implemented in 1971, challenged in the courts, and the Supreme Court made an affirmative finding on April 2, 1974.

And Maybe in 1977 . . .

If I apply that same snail-like progress to Willis Ware's proposal, we'll pass it in 1974, it's sure to be challenged in the courts (since the reporting requirements are enormous and are likely to kill some of the data base companies in existence), and we'll have a court position in 1977.

At that time, according to Ware's sequence of events, they'll then discuss whether the Social Security Number should be used as a universal identifier, and sometime after that they may get around to addressing the problems of combining data bases.

That will put us in the late '70s and I maintain that's too late.

The surging pace of computer technology so outstrips the ponderous waddlings of the federal bureaucracy, we'd better leave the crossing of the t's and dotting of the i's to the legal scholars and get humping on something to control the unleavened coupling of monster data bases.

Without some sort of guideline or regulation, interconnected data bases could be a cancer on society before any federal laws have been passed.

Robert L. Patrick is a computer specialist in Northridge, Calif.

And, Of Course, Stockholm

Decades and decades ago, before Paul Armer had a beard, before Stretch snapped back, before the Japanese had built a computer, the numerical analysts and the computability boys put the bite on Unesco for an international computer charivari. Gathered under the darkened windows of Academe, we banged our tin pans and blew our whistles and touched off a few inexpensive firecrackers. And to good effect – for lo! computer science now rages up and down the earth, APL blooms in Pisa, and artificial intelligence and nefarious networking (or to be precise, the professors thereof) prosper on every continent except Antarctica.

Next month the great triennial gathering of the exotic, the erudite and the agile will be held outside Stockholm. The history of Paris, of Munich, of New York, of Edinburgh, of Ljubljana will repeat itself: a welter of academic sessions, a hecatomb of dead paper, a sterile competition for weird new terminology.

There will be an exhibition of sorts, and some great ceremonies and social events. Enough alcohol to float the Wasa will be poured and downed and regretted. Old friends will embrace, old enemies recoil.

The great problems of our trade will be ignored: the increasing horrors of systems software, the dominance of the manufacturers, the problem of recruiting and retaining valuable workers, the scanty interaction with government policymakers.

Still, I wouldn't miss it. With all its faults, all its financial limitations, all its Through-The-Looking-Glass unreality, there is no other venue that so clearly demonstrates the universality of our tool. There will be Californians and New Zealanders, Brazilians and Britishers, Yugoslavs and Icelanders. In a real sense, we all speak the same language, toil in the same steep vineyards.

And, more fun even than the picnics and the parties, there is politics: what happened to Mexico City, will there be a European subfederation, can Tanaka raise more money? It isn't easy to get to Stockholm, it isn't easy to get good accommodations, it isn't easy to get to the sessions – but to have a good hot political argument, that's easy! I can hardly wait.

Herb Grosch

Maintenance Only One Part of Contract Problems

The problems of the contracting terms currently available to computer users came under sharp criticism from readers after the recent Taylor Report [CW, June 19] indicated that Burroughs was now asking for legal exemption from any responsibility for delays in maintenance – even if the user had been hurt as a result.

No one responding to the questionnaire provided had anything good to say about this exemption, which replaced the previous Burroughs contract. Under the previous contract Burroughs was only exempted from liability if matters were not under its reasonable control.

The Taylor Report
By
Alan Taylor, CDP

Much of the criticism received was directed at wider issues, however, than just the Burroughs contract. One large Burroughs user with twin 6700s wanted to read the questionnaires that were returned, "because with our machine costs running at $1.25 million a year, you can see that my interest is more than academic."

Another user, the president of an Ohio firm with a Honeywell 58, phoned to talk about the situation when the downtime was considerable for months and vanished almost completely on the replacement of the CPU. Were his losses (which now seemed to be really based upon the failure to replace a bad piece of hardware) really his responsibility, he wondered? This was the type of loss that could drive a small business out of business, he pointed out.

One of the best pieces of criticism came from the governor's office in South Dakota. Thomas Gerber, South Dakota's systems management director, agreed that the problem of the maintenance clause requires some consideration but argued that it was not the most important problem in the area. "Other matters should come first," he said.

To check this out, I took a different standard contract – one which does not have the same blanket responsibility disclaimer that is included in the Burroughs one.

The one I used was the NCR 10-Point Computer Rental Agreement F-61501. This only exempts NCR from parts, etc., failure outside its reasonable control, and does agree to keep the equipment in good working order. Even so, a few cursory checks indicated that it was rather one-sided.

Term of Agreement

Take the first area, for instance. Although called Term of Agreement it had many other points quietly included in it. The first point was that the agreement would become effective on the date of its acceptance by NCR at the home office. Officially this is to permit credit-checking to take place; semiofficially to permit the configuration to be validated.

Actually, what it means is that the user is not being offered the full terms when he is asked to sign up and commit himself. The computer companies could easily handle credit-checking, etc., ahead of time. They could provide for a two-week renunciation right if the hardware configuration does not fit. They are the ones who are proposing – so why should the user not be offered a clean contract?

In a similar one-sided attitude shown later in the same paragraph, rental starts whenever NCR certifies the system to be in working order. The user has no right to have his own acceptance tests, or even to check on NCR's. Again – why not? Why must users be regarded as second-class citizens?

More serious is the right given to NCR to cancel instead of delivering the equipment even though the user has met all his obligations and spent money and valuable time in doing so. In this contract, NCR can cancel if credit bureaus show "adverse changes in the customer's credit."

Surely a user, once accepted, and once he has started spending funds in order to prepare for the installation should only be penalized if he breaks the term of the contract – not if third parties (such as credit bureaus) over which he has no control (and who may not have accurate data) decide they don't like him.

Finally, in that same first paragraph there are details of a potentially hideous termination charge. These consist of requiring the payment of all rental at the one-year rate (even though the user may have had the equipment for four years of a five-year term, and so have certainly earned the three-year rate), plus four further months rental or more if that does not equal 15% of the future amount due.

Must Users Agree?

Again – why must *all* users be expected to agree to these terms? Cancellation of leases is a normal business operation, which happens without any one being held to blame. Does NCR really think it is only prepared to do business with people who will accept terms that can become clearly unfair? I don't know – but it certainly begins to look as though reader Gerber was right.

Perhaps there are a number of items in the contracts that computer users should consider before emphasizing just the maintenance problems brought out by the Burroughs case.

I don't have space for going right through the rest of the contract in such detail but some other one-sided areas included:

- No credit being given toward out-of-prime maintenance no matter how much extra-use charges are being paid by the user.
- NCR can increase the rental at 90-day notice by increasing maintenance prices on its published lists.
- A severe repossession clause.
- An automatic termination-charge capability if a payment is one day late.
- A total renunciation of all agreements "related in any way to the equipment or the use and service thereof, unless attached."

Well, there it is – by no means the worst computer contract I have seen, and by no means the best either. That last mentioned item – the renunciation clause – is, of course, a potential killer. Does this mean that the promises of support and service given in the proposals – the claims of providing efficient and accurate software given in manuals or promised by salesmen – are valueless? Does it matter whether such promises were made before the contract – or after it? How about promises made to persuade a computer prospect to sign the contract?

There are plenty of questions here that could be worth studying if the DP profession – or an independent computer user group – is ready to do so.

And there are other areas also. What happens if the equipment is not kept in "good working order" – either because the maintenance people are not skilled or because the equipment is poorly designed? Are users expected to both pay the rent, and lose the time, and to have to sue under a breach-of-warranty in order to get their rights? (Immediate relief is provided for any case where NCR is aggrieved by a user – so why must a user have a hard time in enforcing his rights?)

So, perhaps maintenance is not the first subject to be considered.

However, which items come first I really do not know. I'd like you to let me know your opinion as to where the priorities are.

Then perhaps we can carry on the fight to get reliable data processing – for which we need to have proper contracts.

Interagency Data Use Leads to System 2000

By Louis Simmons
Special to Computerworld

AUSTIN, Texas – Users choose the data base management approach for various reasons. Here in Texas, a rapidly expanding need for coordination within statewide educational systems has brought about increasingly sophisticated methods for dealing with the education planning process.

A combined task force of the Texas College Coordinating Board and the Governor's Office of Information Services is developing a statewide DP master plan for higher education. The task force is using the System 2000 data management system from MRI Systems Corp. to enter, access and update data in a data base containing information on some 80 Texas colleges and institutions of higher education.

The task force considered several data base systems. The final choice was made in part because System 2000 has a broad range of capabilities.

More pragmatically, it is already installed at various state agencies to which the task force has access, so the work can be moved from one site to another if the need arises. And this, in fact, happened when the student load on a 370/155 forced a move to a Univac 1106 elsewhere.

The data base contains some 280 data elements per institution. All the elements are keyed and the data base contains approximately two million characters.

The data base contains information about the institutions' budgets for 1973, 1974 and 1975 as well as current enrollment and projected enrollment for 1975, 1976 and 1977.

It also has statistics on administrative applications and course instruction of the given institutions.

The administrative applications elements include data on admissions, housing, financial aid, testing and counseling, health services, registration, grade reporting, student placement, test scoring analysis, curriculum and course scheduling.

Other data categories are faculty and staff, facilities, supplies and equipment, libraries and reporting systems.

By using the system's natural language capability and report writer feature, correlations can be drawn among the data elements and reports can be generated.

Reports have been produced showing administrative and instructional cost data per student within each institution. Cost information for students within distinct instructional areas has been generated as well.

Also, reports have been produced relating CPU costs, disk storage requirements and numbers of remote job entry and demand terminals available to the students of each institution.

These reports show how the institutions are utilizing computing resouces and will assist in the planning of future programs.

The study will produce a master plan which will cover administrative and instructional computer requirements of the institutions involved. It will also provide a method for implementation of the recommendations.

Since the education task force is utilizing a copy of System 2000 previously acquired by the Water Development Board, there was no acquisition cost for the new operation, even though it is run by a different organization.

Louis Simmons is a systems analyst with the Governor's Office of Information Services.

Data, Logic Flows Tied Directly to Cobol Statements

SUNNYVALE, Calif. – OS/360-370 Cobol programmers can have data and logic flow documentation right beside source listings with the Data Correlation and Documentation (DCD) package now available from Boole & Babbage, Inc. (B&B).

Three levels of documentation are generated by DCD. In addition to a cross-reference listing of data names, literals and figurative constants – nearly a requirement in a documentation package today – DCD provides layouts of all files, records and Working Storage data. It also produces a flow analysis of the Data Division and Procedure Division, a B&B source noted.

Data – In and Out

The layout documentation does more than show what elements are in each file or record and in what order. It also reports the data flow from input through Working Storage to output – and back again, when that is the case.

Programmers use the Data and Procedure Analysis report in debugging and maintenance chores. It contains, B&B claimed, all the data flow analysis right beside the File Description and Working Storage source code, and a logic flow analysis right beside the Procedure Division source code.

The procedure analysis report shows how the program jumps from one paragraph to another, both on the implicit/explicit GO TO and the receiving paragraph names. It also shows the statement number of each data element which is referenced on a line and lists every GO TO that has been changed by an ALTER statement.

DCD is seen by B&B as a necessary tool for programmers who have by-and-large abandoned flowcharting when working with Cobol, but who have found that Cobol isn't nearly as "self-documenting" as originally expected.

Now For OS

DCD is designed for use in an OS environment, including the VS systems, but a DOS version is under development. The current packaging requires approximately a 100K region.

DCD is available under license for a one-time fee of $4,000, which includes the first year of maintenance. Maintenance thereafter is $400/yr, the spokesman added from 850 Stewart Drive, 94086.

'Slacmon' Shows CPE Can Be Low Cost

ATHENS, Ga. – OS/360-370 users need not spend vast sums of money to begin computer performance evaluation efforts. The Slacmon Version 2.2 package is available from the Cosmic clearinghouse for $600, plus $12.50 for documentation.

Slacmon, operating as a system task or job, is designed to monitor hardware and software performance over a given period of time. A series of reports is produced that should aid in identifying areas of low utilization and performance bottlenecks.

Under Slacmon (known earlier as Supermon), monitoring is performed by counting various events, such as SVC calls and I/O interrupts, and by sampling others, including the changing of control blocks.

Those familiar with statistical techniques will realize, Cosmic said, that as the number of these samples increases, the sampling becomes more accurate. By using this sampling approach, it is possible to obtain a "significant amount" of performance data with "very little additional systems overhead," the clearinghouse went on.

Slacmon itself consists of three modules whose structure and functions are often highly dependent upon various services provided by the user's OS supervisor. Multitasking is used to obtain wait times and to perform the sampling; this program must then be run under MVT or MFT with subtasking, Cosmic explained.

Parameter fields on the Execute card, coupled with the corresponding operands in the operator's Start command, allow various functions to be performed or omitted. By careful use of these inputs, overhead can be reduced to a minimum and unwanted reports eliminated, Cosmic noted.

Output from Slacmon consists of up to 12 reports followed by a page summarizing both those reports and the run itself. Certain summary data may appear on the console device, if desired, Cosmic said.

Slacmon is written in Assembler language at the F, G or H levels. As packaged by Cosmic, where it is cataloged as item COS-02241, it contains "approximately 7,013" card images.

Cosmic is at 112 Barrow Hall, University of Georgia, 30602.

'Auto/Plan' Tracks Projects From Start

KING OF PRUSSIA, Pa. – Managers charged with planning projects, including DP projects themselves, can do their work quickly on-line through terminals or in a batch environment under the Auto/Plan system from International Systems, Inc.

Essentially, this package moves DP support one step earlier into the life of a project than the various project control systems available from a number of vendors, including International Systems.

Auto/Plan accepts activities and events, developing the optimum plan based on priorities of projects and activities, dependencies, resource availability, restraints and effectiveness, as defined by each user. The immediate display of the entire plan, each milestone, subnetwork or individual activity permits fine-tuning of the system.

Outputs from Auto/Plan consist of a statistical plan for each activity, milestone or project, as well as time-scaled Gantt charts. Regression charts for resource equipment and project time and costs are also generated.

In effect, the critical path method used by Auto/Plan makes it possible for the planner to simulate, in a very simple manner, the effects of various schedule shifts, priorities or even changes in the project plan.

Auto/Plan is written in Cobol and has already been implemented in OS and DOS/360 installations. Under OS, it takes about 100K bytes; under DOS, "somewhat less." Cobol source code, documentation and 3 days of installation help are included in the $8,000 cost.

International Systems is at 150 Allendale Road, 19406.

Photographed on location at Eilean Donan Castle, Dornie, Scotland.

There is no stronger shield than "Crashguard."

"Crashguard" is a tough oxide protection against headcrash damage. You get it from the people who developed the first computer tape in 1953. People who will go to any length to solve a customer's problem. People who thrive on assisting. The Data Recording Products Division of 3M. A proud clan.

Call out the clan.

"Scotch" and "Crashguard" are registered trademarks of 3M Company.

3M COMPANY

Couger Missed the Point

Curriculum 68 'Not Significant' to Vocational Needs

By Thomas J. Cashman
Special to Computerworld

The usual method of critical analysis is to first "obtain the facts." It is indeed surprising that Dr. J. Daniel Couger in the June 19 edition of *Computerworld* failed to "obtain the facts" in his review of the National Computer Conference (NCC) session "Business Data Processing Education – A Decade of Failure." Instead, Couger attacked my integrity and that of my fellow panelists by stating that we spoke from ignorance about prior work on curricula.

I strongly resent Couger's implication that the members of any panel would give a presentation at an NCC in ignorance and with a corresponding lack of preparation. Such an implication is totally false. The members of our panel are experienced and knowledgeable in education and business data processing and are certainly aware of the numerous curriculum studies which have been conducted during the past decade. It is, in fact, because of studies such as these that the title of the session was chosen.

For some reason, Couger ignored the facts which were available to him in reviewing the session. Instead, he used his column to laud Curriculum 68, "Curriculum Recommendations for Graduate Professional Programs in Information Systems" and other work with which he has been directly associated, as well as his own *Computing Newsletter*. It must be assumed that Couger criticized the session without attending the session and without making any reference to the papers in the proceedings, for if he had, he would have found the following facts:

Rebuttal

- In Gary B. Shelly's opening remarks as reprinted on Page 227 of the *Afips Conference Proceedings*, National Computer Conference, 1974, he stated, "Vocational or career-oriented education as used in this paper is defined as that type of education, at less than a baccalaureate degree, that is aimed at preparing an individual for employment in industry in a specific occupational area." Apparently Couger ignored this definition when he asserted that Curriculum 68 represented a tangible contribution to vocational business DP education. Or else his ivory tower in Colorado Springs is even more remote from the real world than I thought.
- Even though the curricula aimed at the bachelor and graduate level programs as discussed by Couger were not significant to our presentations, his statement that the panelists seemed "oblivious to their existence" is totally irresponsible, because if he had read our papers, he would have noted that the Curriculum 68 was cited in the proceedings on Page 232.
- If Couger had read the papers in the proceedings, he also would have found that his newsletter was cited as a reference. Yet in his column he stated, "The lack of awareness of publications of this type, as exhibited in the NCC session, warrant description of these two publications in this column."

By obtaining the facts cited above for use in his review, Couger might have been able to write with professional competence expected of those in education who look upon critical reviews as a responsible undertaking. Unfortunately, he did not.

Thus, as speakers, we were not ignorant and unaware of curricula and publications. But we are very much concerned with the status and effectiveness of "vocational" business DP education on a national level.

As a representative of industry and as a noted author who has personally talked with over 800 business DP teachers and schools during the past two years, Shelly made these statements:

- Historically, training has been conducted on inadequate hardware.
- Education has not responded rapidly enough to changing technology.
- There has been a lack of in-depth training in all phases of business DP education.
- Fortran should not be taught in a vocational business DP program, as it has virtually no use in the typical business DP environment.
- There has been a failure to train students in areas where personnel are needed at the entry level, such as computer operations, control and documentation.
- There is a lack of experienced and knowledgeable faculty and nowhere for them to turn for training.
- These problems must be solved by those in education if industry is to hire graduates of vocational programs for the positions for which they were trained.

As chairman of the session and a representative from education, with 15 years experience in business DP education, I made the following statements:

- Many of the problems within industry (failure of installations) are due to lack of formalized and comprehensive education, but this fact is not recognized by industry.
- Industry has failed to define the educational requirements necessary to be successful within the business DP profession (Is a four-year degree the appropriate requirement for a position as a programmer?).
- There have been virtually no efforts by professional associations to define a business DP curriculum on a vocational education level, yet this is where most of the training is taking place.
- If business DP is to emerge as a profession, industry must recognize the need for formal educational programs and actively define and support programs of instruction at various levels (high schools, vocational schools, community colleges and four-year institutions).

Dr. Joseph Kinzer, teacher trainer from Central State University, Edmond, Okla., pointed out that the basic problem stems from the fact that the colleges and universities have failed to provide a career path for the training of business DP teachers, and that teachers have no place to go to receive the education needed to bring the latest in DP to the classroom.

Denise Pierce, DP education consultant for the Oklahoma State Department of Vocational and Technical Education proposed the following solutions:

- A national organization dedicated first and foremost to the needs of business DP teachers.
- Massive funding for teacher education and curriculum development for vocational business DP.
- Increased cooperation and support from industry-oriented organizations such as the Data Processing Management Association and the Association for Computing Machinery.
- An effective medium of exchange, both written and verbal, for business DP teachers.

For those who did not attend the NCC and do not have access to the proceedings, the papers presented by Shelly and myself are available free from Anaheim Publishing Co., 1120 East Ash, Fullerton, Calif. 92631.

APG Aids System/7 Users

WHITE PLAINS, N.Y. – IBM's Application Program Generator for System/7 (APG/7) has been rewritten for stand-alone System/7s, enabling users to program such units directly, without a host 360 or 370 for application development.

At the same time, IBM announced the System/7 Transaction Generator System (TGS/7), which will work with APG/7 to get a System/7-2790 data communication system into operation. The 2790 records information at the source and transmits it to a computer for later use.

The System/7 is primarily a process control device. With the new version of APG/7, users enter declarative statements of how an application is to be monitored and what steps are to be taken to control the process being monitored.

Flexibility

APG/7 converts those statements, and user responses to a series of questions, into instructions by which the S/7 manages the operation. APG/7 permits several programs to execute concurrently, random events to be handled under a priority scheme and several similar tasks to be run by a single program.

APG/7 operates on an S/7 with 16K words of storage, a 5028 operator station and 5022 disk storage module. APG/7 and TGS/7 are IBM program products, available under license agreements at monthly charges of $153 and $150, respectively. First shipments are scheduled for the fourth quarter of this year.

COMMUNICATIONS

Burroughs Strengthens TC Intelligent Terminal Line

By Ronald A. Frank
Of the CW Staff

DETROIT – Burroughs has strengthened its TC intelligent terminal line with the introduction of the four-model 3600 Series and three upgrades to the TC 500 family.

The 3600 Series includes four models: the 3620, 3630, 3640 and 3670 – all using LSI circuitry and internally stored variable-length instructions. Applications programs are executed by defined strings of micrologic instructions. The basic model includes 64K of storage with 48 bytes of addressable read/write memory, compared with 1,280 words of storage in the previous models.

The series includes dual communications I/O channels, each of which can work independently of the other. Two different lines can be used simultaneously, one for a poll/select operation while another transmits in a point-to-point net. This allows asynchronous/synchronous lines, 1,200 and 2,400 bit/sec lines, and two-wire or dial-up lines to operate concurrently using the dual-channel feature.

The 3600 Series includes a 4K transmit and a 4K receive buffer and can operate at speeds from 75- to 9,600 bit/sec, but only 1,200 bit/sec asynchronous or 2,400 bit/sec synchronous is standard, with the other speeds available as options.

Input/output devices available with the series include up to four tape cassette stations; computer-compatible tape with up to eight terminals sharing a single drive; 5-, 6-, 7- or 8-channel punched paper tape; 80- or 96-column cards; 85-, 160- or 250 line/min printer, and 256-character panel display.

In addition to the standard Burroughs communications offerings, the terminals can operate with IBM 2260 procedures in four-wire private-line nets and with IBM binary synchronous protocol.

The Burroughs model 3620 features four magnetic tape cassette stations, a line printer and a 30 char./sec console printer which has a positioning speed of 330 character position/sec.

The TC 600, 1600 and 2600 are upgrades of the 500 series. New features include a 32-character buffer for the printer, keyboard buffer, a magnetic tape program loader, electronic keyboard and cassette capability. Up to two cassette stations, paper tape, card equipment or computer-compatible mag tape can operate with the three terminals.

Prices for the 600, 1600 and 2600 range from $8,890 to $15,090, with lease rates ranging from $279- to $455/mo. A typical configuration including a TC 600 with two cassette stations and controller, split platen printer and 352 words of memory would cost $17,070 or $457/mo on a three-year lease.

Prices for the TC 3600 models range from $15,500 to $26,000, with lease rates from $467- to $782/mo. A typical 3620 including 10K bytes of memory, split platen 85 line/min printer with controller and four cassette stations will cost about $37,060 or $1,020/mo on a three-year lease.

Deliveries of the TC 600 are scheduled for the third quarter of 1974, while the 1600 and 2600 are to be shipped in the fourth quarter. The TC 3600 models are also scheduled for first delivery in the fourth quarter of this year.

Data Briefs

TCA Sets Sept. Conference; Varied Workshops Planned

SAN DIEGO, Calif. – The Telecommunications Association (TCA) will hold its annual conference Sept. 25-28 at the Town & Country Hotel here. The theme for the event is "Telecommunications – The Beginning of An Age."

Among the workshops planned for the user group conference are sessions on line switching, advanced communications management, how to cure [vendor] finger-pointing and packet switching. The keynote speaker at the conference will be Howard Hawkins, vice-president of RCA Corp. About 100 displays of telecommunications products and services are expected at the concurrent exhibition.

Registration information is available from TCA 1974 Conference, Box 109, Burbank, Calif. 91503.

T-Comm Supports NCR Terminals

BOHEMIA, N.Y. – Periphonics Corp. has a software package designed to support NCR 270 financial teller terminals on IBM 360s or 370s and on Burroughs 3500 CPUs. The software is used with the Periphonics T-Comm 7 front end.

The software permits single- or multi-drop NCR 270s to communicate in either the standard Ascii asynchronous mode at 1,200 bit/sec or in synchronous mode at 4,800 bit/sec. The T-Comm 7 assembles and transmits messages from the terminal to the CPU at channel speed.

The package costs $168/mo on a three-year lease with maintenance from 75 Orville Drive, 11716.

Terminal, Coupler Prices Raised

Users will soon have to pay more for some intelligent terminals and acoustic couplers, according to recent announcements from two vendors.

Four-Phase Systems, Cupertino, Calif., increased the lease prices of its System IV/40 and System IV/70 intelligent terminal systems. Effective Aug. 1, one-year lease prices will be raised 6% and three-year lease prices will be increased 3%. Purchase prices and monthly maintenance charges are not affected.

Omnitec Corp., Phoenix, Ariz., has raised prices of its acoustic couplers and modems an average of 10%. The increase became effective June 15.

NCR Has Interactive 280

DAYTON, Ohio – An interactive version of the NCR 280 retail terminal is available from NCR.

The 280/725 can be programmed so that the selling floor terminals interact directly with the in-store computer. The terminals can print merchandise descriptions on customer receipts and validate department and class numbers. Tax computations, extensions, discounts and itemization are also done by the terminals.

The main components of the interactive system, which is designed primarily for department and discount store, are the 280-550 terminal and the 725 control processor. The terminal is priced at $3,650 and the basic 725 control processor costs $25,000. Deliveries are scheduled for the first quarter of 1975.

Shared Key-to-Disk Beats On-Line CRT Terminals

By Patrick Ward
Of the CW Staff

MONTGOMERY, Ala. – The faster data entry verification of a shared processor key-to-disk system compared with on-line CRT terminals helped the Alabama Department of Public Safety break a data entry logjam and keep its accident report information current.

Additionally, the move to the key-to-disk system saved the department $6,000/mo, according to a department spokesman.

The department had been using eight IBM 2260 CRT terminals to enter accident data for reports to the National Safety Council, the highway department's engineering staff and the public safety department's own patrol assignment planning group, the spokesman said.

Operators would fill the 2260's 960-character screen with data and then transfer the data to a remote IBM 370/145 in the highway department. The 145 would edit the data and either accept it or return the data to the operator for corrections.

The on-line system needed 90K in the 370, the spokesman said, tied up a 3330 disk, required an IBM 2848 controller at the data entry site and a 2701 communications controller on the 370, plus a telephone line for the 2,400 bit/sec transmission.

The best response time was between three and five seconds, the spokesman said, adding that this delay kept the throughput rate too low to handle the department's application.

"We just couldn't justify [the existing system] cost-wise," the spokesman said.

The department looked at Univac, HIS, IBM and Burroughs gear before finally choosing a Cummins 4400 data entry system with 10 keystations and a line printer.

The department chose the 4400 system because it could provide the desired data entry verification, the spokesman added.

When an operator hits the wrong key, the system signals an error, and the operator can make the correction and continue entering data, he noted.

For accuracy in critical fields, the terminal cursor can be set to return to the start of a selected field for the operator to key in the information a second time. If the data entered the second time doesn't match up with that of the first entry, the system signals an error.

Also, when one operator has keyed the information in on disk, a second operator can call up the same record to verify it by rekeying, the spokesman noted.

An additional disadvantage of the 2260s was the occasional problem of lost data on the 370/145 "where we didn't have control of the mainframe," the spokesman noted.

The department removes the tape from the 4400 system four times a day and updates its accident files nightly on the department's own 300K Burroughs B3500 running under MCP-V.

The B3500, which was not installed when the department got its 2260s, also controls 85 Burroughs TC 500 terminals used for inquiry on various files.

The 3500 has a DC 1200 front end and one billion bytes of moveable-head disk storage and 20M bytes of fixed-head disk capacity.

Four operators now handle all the data entry for the system and keep it current, the spokesman noted, in contrast with the eight 2260 operators who "fell further and further behind."

The department plans to add six more 4400 keystations, which will have eliminated 12 of the 14 keypunch machines that the department had when the first 10 key-to-disk stations were installed.

In October, the department will add a scanning device to the 4400 system to read a turnaround driver's license renewal document, which the mainframe will match with a driver's license file before printing the license out.

The 10-station Cummins 4400 system costs the department $1,750/mo with maintenance. This represents a $6,000/mo savings over the previous system which included the 2260 terminals, printer, controllers, line cost and 90K in the 370/145, the spokesman said.

M-96 Modem Uses 'Digital Simulation'

LARGO, Fla. – Paradyne Corp. has introduced a 9,600 bit/sec modem that utilizes "digital simulations" of analog processes. Called the M-96, the modem is said to be adaptable to a variety of line characteristics because of the digital implementation in the circuitry.

The M-96 is designed for point-to-point applications on four-wire full-duplex circuits for computer-to-computer or computer-to-terminal links. An optional multiplexer feature provides time-division multiplexer capability for synchronous data streams operating at 2,400-, 4,800- and 7,200 bit/sec. The transmission speeds of the M-96 include 4,800-, 7,200- and 9,600 bit/sec and these are switch-selectable from the front panel.

The modem includes various operator diagnostics including a marginal circuit indicator that turns on whenever the signal quality has deteriorated below a certain level. Local and remote loopback capability is included in the unit.

The M-96 can operate on private lines at 9,600- and 7,200 bit/sec with or without Bell conditioning, and the bit error rate is described as "typically" better than 10^{-5}. It can also be used on dial-up lines at 4,800 bit/sec.

The digital implementation of modulation and equalization techniques using MOS/LSI and TTL circuitry is said to offer protection against a broad range of line impairments. Equalization can be accomplished in three ways: fixed preequalization in the transmitter, automatically selected coarse equalization in the receiver and a 60-tape transversal equalizer in the receiver. The modem employs an "advanced" form of AM-VSB modulation.

The M-96 costs $6,500 and is available in 90 days from 8550 Ulmerton Road, 33540.

Line Analyzer Monitors Synchronous Net

By Patrick Ward
Of the CW Staff

VALLEY FORGE, Pa. – A regional power pool here acquired a binary synchronous line discipline analyzer when it put up its first synchronous communications net last fall, because "we saw a need for some way of monitoring, especially in the early test phases," said William Evans, system coordinator for Pennsylvania-New Jersey-Maryland Interconnection (PJM).

The device, a Paradyne 810 Bisync Analyzer, made the sorting out of initial handshaking problems a quicker process, Evans stated.

The synchronous network connects a Xerox Sigma 5, a Sigma 9, a Data General Nova and a Westinghouse 2500 installed at different member power utilities. The four CPUs collect data on the condition of power transmission lines and transmit their own data at 2,400 bit/sec by means of IBM 2701 emulation to an IBM 370/145 at the central power pool.

When the utility pool had brought up an asynchronous net several years ago the staff had dumped incoming control signals into core and then had them printed out.

The PJM staff could have followed the same procedure in bringing up the synchronous net, "but it's extremely time-consuming," Evans said.

The bisynch analyzer made the process quicker, Evans said, because the "hard part is to try to find out what the problem is," not fixing it once it's found.

The power pool's DP staff uses the monitor by watching the LED signals created as line control codes pass through the analyzer.

A correct standard signal trips its corresponding light on the monitor's panel. Problems are discovered by exception, since an incorrect signal fails to illuminate the light for which onlookers are waiting.

In the select mode, the user can create an additional character for the device to monitor, Evans noted.

A 30-character buffer allows retests of control sequences.

Although the utility pool relied on the monitor most when bringing up the new network, the staff still puts it on-line where there may be some kind of problem calling for diagnostic tests, Evans noted.

Paradyne said its Model 810 Bisync Analyzer costs "under $3,000."

Tektronix Package Extends Graphics, APL On 4013, 4015 Units

BEAVERTON, Ore. – The Plot-10/APL Graph-II software package from Tektronix, Inc. expands the potential of interactive graphics and APL when using the Tektronix 4013 and 4015 terminals.

Tektronix has two versions of the software package. The Standard Function Package is the standard implementation for systems other than but equivalent to the IBM APL/360, version XM6. This package includes four workspaces:

- Standard Function Package workspace (4013 and 4015 support).
- Mini-package workspace (4013 and 4015 support).
- EGM workspace (enhanced graphics module – option for 4015 only).
- Examples workspace.

2741 Support

The second version is Plot-10/APL Graph-II – Implementation for APL/360, which has two additional workspaces for 2741 support and modifications to APL/360 for Ascii compatibility.

Price for the Standard Function Package is $500 for the paper source tape and user's manual. Price on the Implementation for APL/360 is $700 for the 9-track magnetic tape and user's manual. The user's manual can be purchased separately for $5.

The firm can be reached through P.O. Box 500, 97005.

NCR Course Gives TP Basics

DAYTON, Ohio – NCR has a basic communications course that allows a student to learn such topics as transmission fundamentals, common carrier services and related topics at his own speed.

Although designed primarily to acquaint the student with NCR equipment, the course also presents objective overviews of communications subjects that are important for every user, according to a company spokesman. Included are sections on domestic and international common carriers, classes of phone lines, types of connections and the specialized common carriers.

Other lessons discuss data transmission, error control and communications disciplines. The NCR sections describe characteristics of the company's equipment and systems configurations.

Course materials include a programmed text and six prerecorded audio cassettes. The manual costs $1.10 and the cassettes are $18 per set. Information is available from the NCR education center here.

Bits & Pieces

Computer Eye 108 Digitizes TV Images for Mini Input

GOLETA, Calif. – The Computer Eye 108 from Spatial Data Systems, Inc. digitizes continuous-tone images for input to DEC PDP-11, Data General Nova and Hewlett-Packard 2100 minicomputers.

The 108 digitizes a TV scan with 512- by 480 elements and resolves 256 levels of gray with an eight-bit code. The system uses a special scanner to digitize photographs, microscope images, radiographs or any picture that can be sensed by a television-type camera tube.

The computer requests information from Computer Eye regarding the brightness of any point on the image. The computer also provides random access to picture information and can be programmed to digitize the entire picture or only those parts of the image that are of special interest.

The 108 with minicomputer interface and software driver is priced at $15,900 from Spatial Data at 500 S. Fairview, 93017.

UP20E System Provides 2 kVA Of Uninterruptible Power

ADDISON, Ill. – Users seeking to operate small computer systems in a difficult ac line power environment can try the UP20E universal standby power system from Instrumentation and Control Systems, Inc.

Special line synchronization permits the inverter to be synchronized from either a 50 Hz, 60 Hz or external frequency source which permits the system to be slaved to a minicomputer clock. Over and under voltage sensors are incorporated to provide alarms in the event that the battery voltage drops below a predetermined level.

The unit provides 2 kVA of completely universal power for up to two hours after loss of the regular commercial line.

The power system is priced at $3,900 from the firm at 129 Laura Drive, 60101.

T24 Records Shipping Shocks On Computer Containers

BEDFORD, Ohio – The Impact-O-Graph Corp. Model T24 recorder advances only when an impact is received on a computer equipment shipping container. The two-foot-long strip chart can record up to 700 impacts with ratings available from 2G to 300G full scale.

Three stylus units record magnitude and direction of each shock regardless of direction.

The T24 is priced at $240 or rents for $50/mo from the firm at 181 Northfield Road, 44146.

At First 370/115 Installation

Denser Disk Packs Put All Files On-Line

By Vic Farmer
Of the CW Staff

ELMSFORD, N.Y. – Converting from an IBM 360/20 to the first 370/115 to be installed was no problem for Beconta, Inc., an importer and distributor of ski equipment here.

Data processing manager Dennis Hickey found that converting his RPG programs was easy. Application programs required a few spot changes and "once you did the first one, you knew how to do them all. Most applications took about five minutes working with the source deck," he claimed.

But Hickey noted his original programs were constructed of standard RPG without use of hidden shortcuts. "We had no subroutines to worry about."

JCL on the other hand was completely different. Chaining to files did require some indicator changes, and the files are laid out differently on the disk pack.

"All our files are now on-line and the only time we need to change packs is for monthly reports," Hickey continued. "We dropped from 33 2311 packs to six 3340 packs, half of which are used for backup.

"On the 20 we had to keep changing packs all the time to handle our regular workload," he added.

To convert the disk files from the 2311 packs to the 3340 packs, Hickey had to go to tape using a 370/125, then from tape to the data modules. It took about five hours of machine time after restructuring the files.

The 96K 115 was installed in March with two 3348 70M-byte disk drives, a 3203 1,200 line/min printer (48-character line), a 2501 card reader and a 2560 multifunction card machine. The 20 had two 2311 drives.

The system is on a two-year lease.

Beconta is about to add some new applications to the 115, in addition to the present accounts receivable/payable, inventory and standard business applications. Credit authorization, perpetual inventory and sales forecasting are planned for the future.

'No Guinea Pig'

Hickey is not using the virtual memory capability of the 115, but is using Power which provides two-job multiprogramming. "We don't want to become a guinea pig when it comes to using virtual memory," he said.

Conversion took three days and IBM provided "a slew of people" from Endicott and Poughkeepsie to help out. "It was good having all the attention that comes with being the first installation as far as support, but we had people all over the place.

"Sometimes I felt we just had too many people," Hickey said.

IBM wanted to get the system up and running and did just that, he said candidly.

Beconta was originally thinking of going to a large System/3, but IBM couldn't meet the firm's required delivery date last year.

"We had looked at a 125 and were impressed, so when the 115 was announced we immediately ordered one – not even knowing really what the heck we were going to get," Hickey said.

"From all appearances the 115 was just a little slower than the 125 for our purposes but still gave us enough upward mobility."

IBM is still making engineering changes that are slowing operation down in spots but nothing major, he said. The DP department used to work a shift and a half and is now down to one shift without overtime.

Not worried about the present scarcity of installed 115s, Hickey said his programs can run on a 125 if something happens to the CPU such as a fire or flood. And, of course, IBM has its eye on the first 370/115.

Firm Centralizes DP—2 Years and 5 CPUs Later

CLEVELAND – A growing, diversified and dynamic business organization requires an expandable and dynamic computer support system. This is a premise that is guiding a very compressed systems development effort at Diamond Shamrock Corp.

In two years, Diamond Shamrock has centralized its data processing function and totally restructured its computer service approach, upgrading an inflexible, job-oriented operating system to an adaptable, communications- and information-oriented operating system.

And in these two years, the firm switched from two IBM 360/40s to a 370/145 to a 370/155 to a 370/158.

"In the early 360/40 job-oriented system, we had 24 visual display units and 40 hard-copy terminals linked to the computer center for communications-based processing," said Charles E. Mosley, general manager of data processing. "Now, 60 display units and 80 (soon to be 100) hard-copy terminals are on-line.

"Where there was one remote job entry facility on-line in the old system, now there are six remote job entry stations. This service is being expanded rapidly to extend the central computer's processing power to more individual user locations," he explained.

In addition, the on-line order entry system is capable of processing a customer order from receipt to ship authorization in 15 minutes. The steps include the customer credit check, scheduling, product rating and routing. A customer order received at a regional sales office in the morning can be shipped that afternoon and billed that evening.

Scattered Development

The diversified DP situation that confronted Diamond Shamrock was not unusual for an organization that had grown rapidly and in many different operating areas. DP systems and programs had developed independently to perform specific job functions.

However, these applications were largely incompatible with one another from an integrated operations control and management information standpoint. Systems were created to meet the needs of the moment, with little thought to the interdependence of related business functions, or to the growing needs for corresponding management information, Mosley noted.

Moreover, the company was "locked in" to existing DP procedures by the "inflexible operating system" that controlled its computers. The operating system effectively barred the company from adopting the advanced data base concepts that are often needed for effective centralized DP, he continued.

The system also kept the firm from moving into multiprocessing, data integration and remote batch processing job entry. The result was a limited capability for growth in on-line, communications-based systems.

So Diamond Shamrock's management chose to consolidate its DP services.

The operating system selected was IBM's OS running with the Information Management System (IMS). Management endorsed this decision in December 1971, and conversion activity began early in 1972 on the two 360/40s using DOS.

Diamond Shamrock's first move was to establish a standard company-wide DP policy, which called for some staff restructuring and a strong emphasis on the central computer facility as a true support service for all company operations and managers.

A master control mechanism was set up to expedite the conversion, involving a number of elements: an annual progress plan – budgeted by individual project – and the use of computerized project control techniques, monthly progress reports by project, a weekly staff review of performance against objective, and a system for daily monitoring of computer operating costs to facilitate accurate cost apportionments among all user groups.

An important element contributing to the speed and success of the conversion

(Continued on Page 16)

Speeds Processing

Plotter Helps Cut Cost of Evaluating Flight Data

HAWTHORNE, Calif. – High-speed electrostatic printer/plotters at Northrop Corp. have increased efficiency and lowered costs in evaluating flight test data on military fighter aircraft.

"The system we now use has cut data delivery time from days down to just a few hours, and the graphs we get are considerably more accurate," according to Charles E. Taylor, supervisor of instrumentation engineering at the aircraft division.

"And of critical importance, the cost of processing data has been cut 99%. Previously, it cost about $1.50 per printout or plot. That price is now only 1.5 cents."

Northrop is using three Gould Data Systems 4800 units to print alphanumeric data and plot graphic data in experimental flight testing of its new F-5E Tiger II fighter.

Sent by Telemetry

Northrop uses seven test aircraft to check in-flight performance on the F-5E. And while flight information is being recorded aboard the aircraft, it also is being sent by telemetry to Northrop's installation at Edwards Air Force Base in California's Mojave Desert.

Flight tapes from the base are delivered to Hawthorne, where they are processed through a Raytheon 704 computer, which prints out information via the Gould equipment.

Prior to installing this system more than a year ago, flight tapes had to be reformatted through a small computer for data processing through the company's central IBM 370. Processed data then were printed out by impact printers or graphed by a mechanical plotter, which was slow, messy and subject to ink clogging.

Taylor said he has two Gould 4800 printer/plotters on-line with the Raytheon computer and a third unit off-line.

Advantages Weighed

The advantages and disadvantages of an electrostatic printer/plotter were carefully weighed against those of impact printers and mechanical plotters.

When everything was added up, there really was no contest, Taylor said.

"Admittedly, electrostatic printouts of alphanumerics and graphs are less sharp and clear than those produced by impact printers and mechanical plotters, but the quality we get from the Gould units more than meets our needs. They are good enough for direct use in reports. And the speed is fantastic."

Taylor was pleased with the reliability of the Gould equipment. During peak periods, the printer/plotters frequently run continuously in excess of eight hours a day, stopping only for minimal routine maintenance. Northrop uses about 100 printouts and plots per flight, and there are at least 1,000 flights per contract.

Despite higher costs for electrostatic paper, Taylor said, the per-hour cost of owning and operating an electrostatic printer/plotter is about the same as using an impact printer and mechanical plotter.

Maintenance requirements are lower and printout speed translates into increased productivity. Initial investment is less, he added, because an electrostatic unit does two jobs instead of one.

Firm Centralizes—Two Years and 5 CPUs Later

(Continued from Page 15)

was the support of top management, Mosley stated.

Another positive element during the conversion was active user participation in program planning and design, he added.

A 370/145 was installed in 1972. This was later upgraded to a 370/155 which, in turn, was supplanted by the 370/158 in December 1973.

Full conversion to OS/IMS was completed in September 1973. The data base to support the centralized computer operation now includes a master order file, an open-order file, a customer master file and a product master file.

Busy System

The on-line order entry system processes an average of more than 800 orders every day for all divisions of Diamond Shamrock's Chemical Co.

Each of Chemical's 15 regional sales offices is equipped with both a visual display and a hard-copy terminal unit. When a customer order is received at a regional office, the display unit is used to input customer identity, product specification, price, coding and the correct shipping point.

Credit Checked

The data is transmitted to the 158 at the Cleveland data center. The program first runs a credit check of the customer's outstanding balance on previously shipped orders, orders in-house but not yet shipped, plus the current order amount. If the customer's credit limit is exceeded in the new order, the system automatically refers the order to the credit department for review.

If there is no credit problem, the computer prints out a copy of the current customer order on a terminal at the division scheduler's location.

The scheduler uses the visual display terminal at his location to validate the order, the price and the shipping point. The computer then produces a copy of the approved order on the hard-copy terminal in the transportation department.

The transportation clerk rates and routes the order and enters this information via a visual display unit. When the computer receives this data, it produces an authority-to-ship plus the bill-of-lading documents on a hard-copy terminal at the designated shipping point.

The Go-Ahead

At the same time it transmits the authority-to-ship, the computer produces an order notification at the originating regional sales office. This verifies to the salesman involved that his customer has placed an order and lets the regional sales office people know that the order has been processed, authorized and is ready to ship

When a shipment is made, the shipping point notifies the system via terminal entry and the computer updates the open-order record and the customer master file. An invoice is processed that evening and mailed to the customer.

Mini Regulates Airport Parking Lot; Controls Fees, Tickets, Monitors Traffic

FORT WORTH, Texas – Is one parking lot just like every other parking lot? Not when the lot has space for 22,000 vehicles. The Dallas/Ft. Worth airport is one of the biggest parking lots around and to keep tabs on where cars are parked, how long and how much to charge is the job of a minicomputer system here.

At the parking operation, all traffic is routed through a 16-lane entry. An automatic dispenser issues a ticket with a number encoded on a magnetic strip. As the ticket is issued, its number and the date and time of entry are automatically recorded on a Data General high-speed fixed-head disk, and eventually on a Pertec D3000 cartridge disk.

When a vehicle leaves the airport, the attendant inserts the ticket into a terminal. The Data General Nova minicomputer searches the disk for all information recorded for that ticket number, computes the parking fee and displays the fee for both the attendant and the driver. The attendant keys in the amount tendered and the correct change is displayed.

Other transactions are more complex as there are 11 different classifications of vehicles at the airport.

The Parking and Revenue Control System (Parcs) was developed by Jacquard Systems, Inc., Santa Monica and Gastex Corp., Van Nuys, both in California.

Parcs dispenses tickets; computes and displays parking fees; monitors all traffic entering and leaving the airport; provides lane volume, equipment status and daily deviation reports; provides a daily log of all vehicles parked; and records the number of transactions, amount of cash collected, unpaid accounts and methods of payment other than cash.

The revenue control portion of the system relies on a Pertec D3000 cartridge disk drive that has a storage capacity of 50M bits and an average access time of 35 msec.

At the exit of the parking lot, each cashier has a terminal that feeds into the D3000. The terminal also has access to information from the minicomputer. The terminal records the number of transactions for each cashier, the amount of cash collected, any unpaid accounts that need to be invoiced and methods of payment other than cash. At the end of each cashier's shift, a report is generated designed to verify the revenue collected by the cashier.

One of the reasons for using disk drives is that they provide fast access to information. For example, by the time a cashier leaves the parking lot and returns to the office, a printed report is ready to verify the revenues collected, officials explained.

The cartridge disk drive also is used to record any nonnormal conditions such as a nonreadable magnetic strip or equipment malfunctions.

Other reports generated from the data stored on the cartridge disk include an equipment status report and a per lane volume report. The volume report assists in scheduling cashiers to cover peak traffic periods.

The system also keeps track of what happens to a passenger vehicle once it enters the vast parking area. For example, the driver might park in a remote or satellite parking area which means a reduced parking rate. To enter the remote parking lot, the driver inserts the ticket into a reader terminal.

A similar approach is used for the valet parking service. The ticket is inserted into a reader and the information is recorded on the disk. At the same time, the reader terminal dispenses two tickets which not only record the time and date of entry, but also assign the vehicle to a specific parking slot.

When the driver returns, the valet simply refers to the ticket to locate the vehicle. When the vehicle leaves the airport, the minicomputer processes the information on the disk and the vehicle is charged a premium rate for the valet parking service.

We'll have a hallfull of companies at the 1975 Computer Caravan.

Almost all of the available space at the 1975 Computer Caravan has already been spoken for by a wide variety of leading computer companies. So our travelling computer users' forum and exposition will be displaying almost every aspect of complete computer systems in one, uncrowded exhibit hall.

With leading companies like these, the 75 Caravan will be bigger and better than ever:

Control Data Corporation
Computer Devices, Inc.
Pansophic Systems, Inc.
Cullinane Corporation
Wang Laboratories
Data General Corporation
Digital Equipment Corporation
Incoterm Corporation
Sycor, Inc.
Prime Computer, Inc.
Raytheon Data Systems
Raytheon Service Company
Inforex, Inc.
Edutronics Systems Int'l
Mohawk Data Sciences
BASF Systems Inc.
Cummins Allison Corp.
Gould Inc. Instruments Systems Div.
N.C.R.
Cambridge Memories, Inc.
Software International
Consolidated Computer, Ltd.
3M Company, Microfilm Prod. Div.
On-Line Systems, Inc.
Cooke Engineering Company
Boeing Computer Services
Delta Data Systems
Modular Computer Systems, Inc.
Scan-Data Corporation
Penril Data Communications, Inc.
Scope Data, Inc.
Panasonic/Matsushita Electric Corp. of America
Interdata, Inc.
Quantex, Inc.
Precision Methods, Inc.
A T&T Company
Cincinnati Milacron, Process Control Div.
Digital Computer Controls
Potter Instruments Co., Inc.
Tesdata
Mini-Computer Systems, Inc.
Software AG
Scientific Measurement Systems
Software Sciences Corp.
Datatype Corporation
G.T.&E. Information Systems
Auerbach Publishers, Inc.
Infotron Systems
Lockheed Electronics Company, Inc.
General Computer Systems
California Computer Products
General Automation
Pertec
Varian Data Machines
Texas Instruments, Inc.
Electronic Memories & Magnetics Corp.
Stromberg DatagraphiX, Inc.
MSI Data Corporation
Courier Terminal System
Pacific Micronetics
Omnitec Corporation
Decision, Inc.
Omron Systems, Inc.
Quantor Corporation
Tab Products Co.
Beehive Terminals
Hewlett Packard
Tri Data
Tektronix, Inc.
Datapoint Corporation
International Communications Corp., a Milgo Company
Bell and Howell
Periphonics Corp.
The Computer Software Company
Southern/Pacific Communications Company
Program Products, Inc.
Anderson Jacobson, Inc.

If you're marketing products or services in the computer industry and would like to be part of The '75 Caravan, we're still accepting reservations for the limited space available. Call Neal Wilder or Dottie Travis at (617) 965-5800 for all the details.

The Computer Caravan/75

Sponsored by

COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

COMPUTER INDUSTRY

CI Notes

Bank of America Picks BR

OAK BROOK, Ill. – Bunker Ramo has received a $10 million contract from the Bank of America to equip its domestic offices with the Community Office On-Line System.

The system will enable bank personnel at community offices to obtain account balances and other customer information from the bank's central computers, as well as perform some data entry.

The contract calls for about 5,500 CRT terminals as well as minicomputers to handle message traffic.

IBM Japan Hikes 360, 370 Prices

TOKYO – IBM Japan has raised its sales prices for 360s and 370s, effective July 1, by approximately 5%.

Rental prices will not increase until January 1975, when a 360 lease will cost about 7% more and a 370 lease will go up about 10%.

The increase in prices reflects the increased costs for materials, personnel and other business expenses, a spokesman said.

Dataproducts Grabs DEC Order

WOODLAND HILLS, Calif. – Dataproducts Corp. has been awarded two contracts for line printers and core memory stacks from Digital Equipment Corp. (DEC). The combined business represents the largest order in Dataproducts' history, the firm said.

DEC will use the 300 line/min printer throughout its computer line, according to Graham Tyson, Dataproducts president.

Pertec Sells COM Line

EL SEGUNDO, Calif. – Pertec Corp. has sold its computer-output-microfilm (COM) product line to Bell and Howell Co.

Pertec will continue manufacturing COM products for Bell and Howell.

Pertec President Ryal R. Poppa explained the divestiture as a means of enabling the company "to concentrate our marketing efforts in the product areas offering higher sales growth to Pertec – tape, disk, CRT and shared processor lines."

Supershorts

Electronic Memories & Magnetics Corp. has named Megatronix, Ltd. as its Canadian representative.

– – –

Sanders Data Systems' International Division has appointed Kanematsu-Gosho, Ltd., Tokyo, as exclusive distributor of Sanders' data display terminal systems, products and peripheral equipment in Japan.

– – –

Orbis Systems, Inc. has appointed sales representatives in seven major marketing areas. They are: Hansen Associates, New York/Long Island; Ossmann Instruments, northern New York; Denco, Philadelphia/New Jersey; Gentry Associates, Southeast Coast; S.E.A., Inc., central U.S. and Dietrich & Associates, Detroit.

– – –

Sycor, Inc. has expanded its service coverage to include Alaska and Hawaii. Terminals in the Anchorage area will be serviced by H&M Electronics, Inc., and Sorbus, Inc. will provide service on the island of Oahu.

– – –

Fabri-Tek, Inc.'s end-user products will be marketed in Latin America by Compania Nacional de Computacion, S.A. of Caracas, Venezuela.

'Dividing World With AT&T?'

Reactions Vary to IBM Satellite Plan

By Nancy French
Of the CW Staff

"We think it's great."

"It's a real threat to competition. IBM and AT&T will divide the world's business in half and that will be the end of everyone else."

These were some of the varying responses to the recent announcement that IBM and Comsat General Corp. will jointly enter the domestic satellite communications industry by purchasing CML Satellite Corp. [CW, July 10].

IBM and Comsat General have filed with the Federal Communications Commission (FCC) for permission to operate the satellite, proposing that the two jointly purchase CML Satellite with 55% and 45% respective shares.

With the exception of A.G.W. (Jack) Biddle, executive director of the Computer Industry Association, most respondents indicated they would take a wait-and-see attitude.

But it's a safe bet that this FCC application won't go unchallenged. A staffer at the FCC commented it wouldn't be any surprise for "even the Justice Department to get involved with this one."

Comsat has been denied permission by the FCC to own greater than a one-third share of the corporation, as long as it continues to engage in its present communications business, without coming back to the FCC for a kind of special dispensation, according to the FCC spokesman.

Central Questions

Two key issues surfaced in the various reactions to the IBM-Comsat General move. First, should IBM be permitted to enter the data communications industry in view of the present FCC principle of separating data processors and data communicators – not to mention potential monopoly? Second, should Comsat General be permitted to own a 45% share of CML without giving up part of its present business?

According to Biddle, "there is no natural need that would benefit the nation for IBM to be in the common carrier business.

"This IBM-Comsat General acquisition is going to create another vertical integration structure that a decade or two from now is going to have to be broken up, so it shouldn't be permitted to come into being in the first place," he said.

"The speed at which they will process data over the system will exceed the capabilities of the present Bell network, so once you have gone to their system, you'll have to process and transmit all of your data over their satellite," Biddle said.

"It would wipe out all competition except for AT&T and IBM." Those two "are not going to wage a price war between them that's going to hurt profitability – they'll make a gentleman's agreement to simply divide the world between them," Biddle claimed.

"AT&T will continue to handle the general public's telecommunications needs and IBM will handle the world's data communications and a substantial part of its voice communications needs," he predicted.

A spokesman for AT&T said he could make no comment.

Western Union did not feel the action would change its plans in any way. James Foster, vice-president, public affairs, remarked, "Our satellite is up and we will be launching our second satellite in early September.

Special carrier Datran's response was guarded, with President Glenn E. Tennisten issuing a prepared statement:

"Plans announced last week by IBM and Comsat . . . will be studied by Datran . . . In order to proceed with their plans, IBM and Comsat must file an application with the FCC.

"We concur with their statement that there is a burgeoning market for data communications and that communications technology is becoming increasingly important to data processing."

Another special carrier, Packet Communications, Inc., saw the announcement in a positive light. Janet Taplin, director of corporate planning, commented, "Packet Communications is a value-added carrier and we buy lines from existing carriers. The way we look at it, the move will strengthen one of our suppliers and we hope eventually will give us better satellite communications in the future. It'll bring a lot more financial stability to the satellite market which just hasn't been there before," she concluded.

The Computer and Business Equipment Manufacturers Association did not have any official statement, but Steve McCloskey, executive director, noted that Cbema has "taken the position with the FCC that competition in some of the areas of the communications business is a very desirable thing.

"What we really need is viable, cost-competitive telecommunications links," McCloskey said.

Lessors See 360 Demand Growing; Cite Tight Money, FS as Factors

By Molly Upton
Of the CW Staff

HARTSDALE, N.Y. – Demand for IBM 360s on lease is currently 50% to 75% higher than it was in January of this year, estimated Michael Creedon, president of the Computer Lessors Association.

"In the first quarter of this year, the 360 business was awful; nothing was moving," he commented. "Now demand has surged."

Tight money is making users reevaluate whether they need a 370, he said, and many are deciding they don't.

The market for 65s and 50s has firmed up, and the market for 40s has always been pretty good, he said.

But 30s are "a bit of a problem," owing to the volume of machines still in the marketplace, Creedon commented. "There is a lot of activity with the 30s though," he added.

"About 50% to 70% more companies are really interested in sharpening their pencils and figuring out how to make the 360 last longer or how to bring in a 360 or make the 65 do the work done by a 158," he noted.

"In good times, when there's plenty of money around and nobody's harping on budgets, we've got a hell of a time selling 360s. But when the money rates go up, the 360 becomes very desirable," he said.

"The popularity of the 360s held by leasing companies has been helped to some extent by IBM," he observed. "The 370s have not done, to a large degree, what IBM claimed they would. Here IBM comes out with another 1M byte for the 145. It's the classic case. When they first came out with virtual memory, you didn't need that much real memory. Now they announce another million bytes."

Definite Upturn

A random survey of other leasing companies revealed a busy season for 360 lessors. Tom Takash, director of equipment sales for Greyhound, noted there has been a definite upturn within the last 45 to 60 days, and lessors are moving more equipment.

Prices have leveled off, he said, noting the 40 seems to be the most popular, followed by the 30, with the 65 being the most difficult to move because of its increased numbers.

Another lessor categorized the 360 field as a "great market," noting a lot of users are staying with it. "People are becoming more realistic, and the small companies are changing their DP equipment less frequently," he observed.

"DP managers are thinking of 370s and realizing the Future Series (FS) is coming, so are deciding to stick with the 360s," he said.

However, one lessor described the 360 leasing market as "very competitive" with prices somewhat "chaotic."

DPA agreed with Creedon that the 360 leasing market is much more active now than in January, with the exception of the 30 "which is dormant," according to C.S. Brown, national contract administrator.

Quarterly Record

IBM 2d Period Net Rises 35%

ARMONK, N.Y. – IBM's earnings and revenues lived up to Chairman Frank T. Cary's prediction of a "very good" second quarter and set a record for any quarter.

Earnings bounded 35% to $482.6 million or $3.28 a share compared with $356.7 million or $2.44 a share in the same period a year ago.

Revenues climbed 28% to $3.26 billion from $2.55 billion last year.

The record quarter figures, combined with those of the first quarter when earnings rose 27% on a revenue increase of 22.5%, resulted in a 31% rise in earnings for the first half over the year-ago figures.

Six-month earnings reached a record $913.8 million or $6.22 a share compared with $696.9 million or $4.78 a share in the same 1973 period.

Revenues for the first half totaled $6.26 billion compared with nearly $5 billion in the year-ago period.

Cary cautioned that "these (first-half) rates of gain aren't expected to be maintained for the balance of the year, in view of the high volume of outright purchase of data processing equipment in the latter part of 1973.

"The amount of DP equipment purchased outright was considerably higher in the second-quarter and six-month periods than in the comparable periods of 1973, and contributed significantly to the year-to-date increase of 25.3% in total gross income and 31.4% in earnings before income taxes," he said.

"Installations of new DP equipment continued at a relatively high level during the second quarter of 1974 and are expected to remain at a high level for the balance of the year," he noted.

Income from rentals and services increased 10.2% over the first six months of 1973, whereas for the first quarter it rose 9.5% above that in the year-ago period.

British Foresee No DP Policy Changes

LONDON – Despite a decline in ICL's market share and a worsening of the British balance of trade in computer equipment, Secretary of State for Industry Anthony Wedgewood Benn said the British government plans no major policy changes regarding the computer industry in Britain "until we are ready with detailed proposals."

Speaking before the Computer Industry Subcommittee of the Commons Select Committee on Science and Technology, Benn admitted, "I am not pregnant with new proposals for the moment," according to a report in *Dataweek*.

This means the government will continue to support ICL and has no plans to pressure ICL to link up with DP makers in EEC countries, according to *Computer Weekly*.

Benn also noted he is in favor of the government's single-source policy for ICL, adding this will continue.

ICL's market share is declining, from 34.7% at the end of 1972 to 32.9% at the end of 1973, while IBM's share rose from 38.4% to 39.7%, *Dataweek* indicated.

In addition, Britain's imbalance of trade in computer equipment rose to $50.2 million at the end of 1973, Benn revealed.

During 1973, exports rose from $200.8 million to $296.4 million, while imports rose from $222.3 million to $346.6 million.

Department of Industry figures by equipment value indicate 62.5% of all computers in the UK as of December 1973 were made by foreign firms.

Foreign manufacturers placed 73.3% of the computers in the private sector, compared with 36.8% in central government.

In terms of numbers of machines, ICL had 20.9% of the whole market; IBM had 17.7%; Honeywell 8.9%; and Digital Equipment Corp., 8.5%. Univac held a 2.2% share, according to the report in *Dataweek*.

Lack of Action Criticized

LONDON – Airey Neave, chairman of the House of Commons Computer Industry Subcommittee, criticized Secretary of State for Industry Anthony Benn for the apparent lack of government policy on the computer industry.

"I am disappointed that the government has not moved any further forward than the last government toward a policy for the computer industry. And there seems to be very little more being done about supporting a national computer industry," he said, according to an article in *Dataweek*.

Speaking for himself, Neave said, "It is quite obvious we did not think the department had any statistical information about the state or growth of the industry. We don't see why it has not got more."

CDC Gets TAB Order

VICTORIA, Australia – Control Data Corp. has received an order valued at over $12 million from the Totalisator Agency Board here for a statewide betting system.

The order, one of the largest placed in Australia, includes about 14 System 17 minis, which will serve about 750 terminals.

Foreign Orders & Installations

The Finance Ministry of the North-Rhine Westphalia province of West Germany has ordered twin Honeywell 6060s and an H316. The equipment will interface with Nixdorf and Telefunken equipment.

The 6060s will be linked with Nixdorf 820 computers which can handle up to 31 terminals.

Cape Provincial Administration Hospitals Department, South Africa, has ordered a Univac 1106 to be the hub of a real-time medical system serving three hospitals.

Friesch Rundvee-Stamboek, a Dutch cattle-breeding firm, has ordered an NCR Century 101 for registration and processing data on its Friesian cattle.

Kovo Foreign Trade Enterprises, Czechoslovakia, has ordered 11 data acquisition and communication systems from Varian Data Machines.

Kommun-Data Co., Stockholm, has ordered a third Univac 1106 system to handle utility billing for municipalities.

Bass Charrington Ltd., a European brewing group, has ordered two Univac 1110s to implement a real-time order processing system.

NCR Readies Small System

DAYTON, Ohio – "As markets change, we must reevaluate our products quickly," E.F. Shipman said in his keynote address at the NCR annual users meeting.

One result of careful market analysis, said the senior vice-president of domestic marketing, is the small business system (SBS) which NCR will be releasing during the fourth quarter.

The minicomputer-based system fits into the NCR product line between the 399 and the Century 50. SBS will be disk-compatible with both the Century Series and the 399 and will also use compatible tape cassettes, he said.

Shipman noted terminals are taking on a new look with the changing technology of the times.

"We can foresee terminals that have their own built-in processors, memory and even compilers," Shipman said, observing this offers more application opportunities than if hardware alone is built to fit an application.

"By building relatively general-purpose terminals, we can tailor the software to customize a terminal for a specific application," Shipman stated.

Users Need Education on Leasing 'Deals'

HARTSDALE, N.Y. – Leasing companies and users need to join forces in weeding out unethical deals by both parties, according to Michael Creedon, president of the Computer Lessors Association and vice-president, marketing, of DPF.

In addition, "there is a great need for educating users on what is a reasonable deal," he said.

A user out looking hears several offerings "and he thinks he's in the driver's seat," said Creedon. "But 90% of those making offers can't produce" or cannot produce at the prices quoted.

A user "thinks he understands leasing, but he doesn't."

More important than price quotations, the user must ascertain whether the dealer has the machine and if it is in good working order; he must also obtain maintenance records and learn the system's features, Creedon noted.

"The user should protect himself," he said.

Users who play several firms off against each other for good price quotes do not contribute to the health of the business or ethical practices on the part of dealers, he noted.

Creedon said he thinks some sort of warranty or bonded bid by dealers would help reduce unethical practices of not delivering machines promised and of changing rates.

Creedon's idea of having dealers submit bonded bids, or possibly warranties, would ensure the user that he was entitled to financial penalties if a company didn't produce. If he didn't get a bonded bid, then he would know he should be careful about who he was doing business with, Creedon said.

"I think users should really protect themselves [from] dealing with a phantom machine.

"When the leasing company shows good faith, I think the user will too," Creedon stated. But the user should know his responsibilities, he added.

He noted that lessors are not particularly enthused with the user who agrees to a lease and then cancels because he's found something less expensive.

The warranty or bonded bid concept is principally aimed at those dealers who cannot produce what they agree to, and at users who abuse the leasing industry by backing out of a deal because they've found a less expensive agreement. "I think there is responsibility on the part of users, too."

With tight money, and prime rates going up, lessors should inform users that the price quoted may change before delivery if the prime rate goes up two or three points, he added.

Basic/Four Division To Handle Applications

SANTA ANA, Calif. – Basic/Four Corp. has formed a Systems Division to assist in the implementation of applications programs for the firm's computer equipment.

The division will be formed by integrating a portion of Vertex, a Basic/Four subsidiary, into the company.

"Until now we have handled application software work primarily through independent software vendors," President A.M. Cosentino said. "We will continue to use vendors to provide most Basic/Four applications programs, but will provide increased support through the Systems Division."

Contracts

Wangco, Inc. has received an OEM contract from MSI Data, Inc. for Mod 7 tape drives which will be used in conjunction with MSI's Model 215 and the DS-IV minicomputers.

Digital Resources Corp. has been awarded a $5.7 million contract by Sonatrach, the Algerian government-owned oil and gas company, to assist in developing geophysical seismic processing applications and computerized petrochemical and process control applications.

Hewlett-Packard has been awarded a contract by ABC Digital Electronics, Inc. for five HP-2100 minicomputers which will be used in QC440C computer diagnostic test systems.

Tano Corp. has been awarded a contract by Columbia LNG Corp. for the design and manufacture of an automation system to supervise the handling of liquid natural gas from LNG tankers to shore, and during the vaporization process.

Computer Sciences Corp. has received a contract from the National Aeronautics and Space Administration (Nasa) for programming and DP support of both manned and unmanned space flights, as well as for network testing, simulation and control of space missions conducted through the 22-station tracking network.

Systematics, Inc. has been awarded a facilities management contract by the First National Bank of St. Petersburg, Fla.

Raytheon Co. has received a contract from the Newspaper System Development Group for development and production of display terminals for use in the composition of advertisements and newspaper pages.

Tri-Data Corp. has received a $2 million contract from Teradyne, Inc. for about 500 Cartrifile digital magnetic tape units for use in Teradyne automated test systems.

Firms Must Take Proper Steps To Safeguard Trade Secrets

By Robert A. Bucci
Special to Computerworld

The reaffirmation of the vitality of state trade secret laws by the U.S. Supreme Court in Kewanee Oil Co. vs. Bicron Corp. [CW, May 22] and the charges levied against Telex by IBM's counterclaim indicate firms should take a closer look at trade secret laws.

The Supreme Court further ruled that federal patent statutes don't preclude states from adopting laws protecting trade secrets.

According to the Restatement of Torts: "A trade secret may consist of any formula, pattern, device or compilation of information which is used in business and which gives a company an opportunity to obtain an advantage over competitors who do not know or use it."

A partial listing of items which companies tend to regard as proprietary and as likely candidates for trade secret protection includes: information relating to products and processes, formulae, manufacturing and testing methods, inventions, technical data, specifications, models and financial data. Still others are: statistical data, customer lists, supplier lists and marketing plans.

Viewpoint

The attractiveness of trade secret protection to the business community is that unlike patents, which last for 17 years from the issue date and are not renewable, a trade secret can go on forever, provided the owner takes proper and reasonable steps to keep it a secret.

Many cases turn on this very point. If the owner took reasonable steps, trade secret protection is obtained, but if he sat on his hands and didn't take affirmative steps to safeguard the secrets, courts are reluctant to find for him.

Does a Trade Secret Exist?

In determining whether a trade secret exists courts often adopt the approach suggested by the Restatement of Torts and rely on the following points:

- The extent to which the information is known outside of the business.
- The extent to which it is known by employees and others involved in the business.
- The extent of measures taken by the employer to guard the secrecy of the information.
- The value of the information to the employer and to his competitors.
- The amount of effort or money expended by the employer in developing the information.
- The ease or difficulty with which the information could be properly acquired or duplicated by others.

A key thing to bear in mind is that a trade secret is protectable only against a wrongdoer. If someone obtains a trade secret by fair means he is free to use it.

For example, if Y independently develops a product which X has been treating as a trade secret, Y is free to use it.

If Y buys X's product and "reverse engineers" it to find out what makes it tick, Y is free to exploit whatever secrets it learns.

But if Y obtains it from X by improper means, there is certain to be trouble.

To increase the likelihood that a firm's trade secrets remain secure, the following steps should be taken:

- Keep proprietary information under lock and key when not in use.
- Review technical papers and speeches prior to presentation at seminars and trade shows to avoid the disclosure of company trade secrets.
- Require research, sales and management employees to sign patent assignment or secrecy agreements as a condition of employment.
- Utilize contracts containing post-employment restrictions, i.e., covenants not to compete.
- Mark material which is proprietary with a distinctive legend.
- Keep a log of company trade secrets and a list of those with access, and notify those with access of their obligations to maintain secrecy.
- Remind departing employees of secrecy obligations as part of their exit interviews.
- If the departing employee has an obligation to maintain secrecy with respect to certain information learned while in the firm's employ, notify his new employer via registered mail (return receipt requested) that the employee has such an obligation.

The new employer will get the message.

Robert A. Bucci is an attorney.

Position Announcements

SYSTEMS ANALYST/PROGRAMMER

Sandia Laboratories has openings for administrative systems analysts. Candidates should have a Master's Degree or its equivalent with a strong concentration in computer science and a demonstrated interest in business applications of data processing. UNIVAC 1108, DMS 1100 and COBOL or other comparable programming experience would be desirable.

Excellent salary and benefits are offered. Please send your resume to:

Sandia Laboratories
Staff Employment Division 4251
Albuquerque, N. Mexico 87115

Sandia is involved in applied research for the Atomic Energy Commission.

We are an equal opportunity employer with a commitment to minority and female employment.

Sandia Laboratories

TWO MANAGERIAL OPPORTUNITIES

WITH GENERAL ELECTRIC INFORMATION SERVICES BUSINESS DIVISION

Two forward-thinking managers are invited to join General Electric, the world leader in information services. These immediate openings result from continuing growth and offer you the opportunity of continuing progress in your field in an exciting and rewarding growth environment.

Programming Manager-Systems

Will be responsible for technical management of IBM operating systems and applications software requirements including the conversion of applications from local to remote processing as well as perform audits on operating and application systems performance. A minimum of five (5) years experience in related operations work and a BS/BA degree in Information Sciences. Specific IBM/OS experience is required.

Manager-EDP Project Management:

Will be responsible for technical management of IBM hardware operations and customer services including optimizing equipment utilization, updating operating procedures and conducting audits of operations and customer services. A minimum of five (5) years experience in related operations work and a BS/BA degree in Information Sciences.

Both positions offer excellent salaries (commensurate with experience) and fringe benefits, including company-paid relocation. If you qualify, send resume today, including present salary, to: Mr. J. Werbicki, General Electric Information Services Business Division, 401 No. Washington St., Rockville, Md. 20850.

GENERAL ELECTRIC

An Equal Opportunity Employer, M/F

PROGRAMMERS

SYSTEMS PROGRAMMERS

Programmer and Systems Programmer openings exist at this large University Computing installation.

The center is currently running the latest versions of OS and ASP on an IBM 370/168 supporting several TP CAI and text editing systems. The center services the instructional, research and administrative computing requirements of 21 campuses.

Software available at the center includes standard IBM compilers and service programs and a large assortment of special scientific, statistical and simulation packages used in university communities.

REQUIREMENTS: Bachelor's degree and two (2) years university experience or equivalent necessary.

Experience in PL/1, Assembler or Fortran highly desirable.

BENEFITS: Extensive medical and insurance plans, 5 weeks vacation.

All those interested should send a resume and full salary history to:

CW Box 4171
797 Washington St.
Newton, Mass. 02160
An Equal Opportunity Employer

POSITION ANNOUNCEMENTS | POSITION ANNOUNCEMENTS | POSITION ANNOUNCEMENTS

INSTRUCTOR DATA PROCESSING

To teach in a comprehensive community college near urban centers. Must be qualified to teach COBOL, in addition to RPG, assembly language, systems analysis design, and introduction to electronic data processing. The successful candidate will have at least a B.S. in Data Processing or Computer Science and at least 3 years of directly related field experience. Other degree fields may be considered if substantial field experience is judged to be qualifying. Advanced degrees may be helpful but are not essential. Minimum 10 month starting salary, $10,520 instructor, or assistant professor level. Good fringe benefits. Address replies before August 1, 1974.

CW Box 4169
797 Washington St.
Newton, Mass. 02160
An equal opportunity
Affirmative Action Employer

EDP AUDITOR

The Internal Audit Division of Maryland National Bank has a career opportunity for a college graduate with a degree in either Computer Science or Accounting. The successful candidate should possess a knowledge of programming, systems design and auditing techniques.

If you are interested in becoming part of a dynamic organization please forward your resume to Rona Weiner:

MARYLAND NATIONAL BANK
225 N. Calvert Street
Baltimore, Md. 21202
(301) 962-5638

Computer Professionals

Your next employer is a friend of ours!

We know him because we know just about everyone who controls EDP employment. And most of them we know on a very friendly first name basis.

So, whenever you're ready to advance your career just contact your nearest ESP Associates office. We'll show you a wealth of career opportunities from which to select your preferences. And we'll give you a glowing introduction to your next employer... either in your own locality or anywhere else if you want to relocate.

CHICAGO
McCormick & Associates, Inc.
386 North York Street
Elmhurst, Illinois 60126

CLEVELAND
McCormick & Associates, Inc.
601 Rockwell Avenue
Cleveland, Ohio 44114

DALLAS
Data Processing Careers
Suite 1109
Stemmons Tower West
Dallas, Texas 75207

DETROIT
Electronic Systems Personnel
1705 Fisher Building
Detroit, Michigan 48202

HARTFORD
Compass, Inc.
900 Asylum Avenue
Hartford, Connecticut 06105

KANSAS CITY
Electronic Systems Personnel
370 TenMain Center
Kansas City, Missouri 64105

LOS ANGELES
Career Data Personnel Agency
Suite 323
3303 Wilshire Boulevard
Los Angeles, California 90010

MILWAUKEE
EDP Consultants
11430 W. Bluemound Road
Wauwatosa, Wisconsin 53226

MINNEAPOLIS/ST. PAUL
Electronic Systems Personnel
801 Nicollet Mall, Suite 1716
Minneapolis, Minnesota 55402

PITTSBURGH
Electronic Systems Personnel
106 Lawyers Building
428 Forbes Avenue
Pittsburgh, Penna. 15219

SAN FRANCISCO
The Computer Resources Group
303 Sacramento Street
San Francisco, Cal. 94111

ST. LOUIS
Christopher & Long
7777 Bonhomme, Suite 1801
St. Louis, Missouri 63105

WASHINGTON, D. C.
ESP Systems Corporation
Suite 704
1211 Connecticut Ave. N.W.
Washington, D. C. 20036

esp associates

EDP PROGRAMMERS ANALYSTS

Aramco's New York office requires EDP Programmer/Analysts with 2-5 years experience, preferably in 1130 FORTRAN, IBM 370, PL/1 conversion, oil cargo scheduling, or general petroleum industry. Must have degree in Engineering Physical Sciences, Mathematics or Business Administration, and be willing to transfer to Houston, Texas.

Opportunities also exist for Dhahran, Saudi Arabia, Data Center, utilizing IBM 370/158 MP in systems, business & engineering applications.

Employment Supervisor
ARABIAN AMERICAN OIL COMPANY
1345 AVENUE OF THE AMERICAS
NEW YORK, NEW YORK 10019
An Equal Opportunity Employer

SYSTEMS ANALYST

Rapid expansion has created an immediate need for a degreed/experienced individual. The current weekly update operational mode will be replaced by an on-line data based communication environment.

Designing and implemention of manufacturing systems is the #1 project. We prefer your experience in this type of development work to include NCR system usage for exposure. Our opportunity is for the impatient professional seeking the chance to be part of this successful operation.

We offer an excellent salary with attractive benefits and relocation to the beautiful heartland of the Missouri Ozarks. If you have the experience and desire to progress, please contact us for immediate consideration.

Advanced Circuitry Division
LITTON INDUSTRIES INCORPORATED
4811 West Kearney
Springfield, Mo. 65803
An Equal Opportunity Employer

INTEGRATED SYSTEMS SUPPORT INCORPORATED

BEAT INFLATION IN LOW COST AREA OF VIRGINIA BEACH, VA.

Integrated Systems Support, Inc. (ISSI) is significantly increasing its professional programming staff in Virginia Beach, Va. and has three new contracts with many challenging positions for real-time command and control programmers. So if you want a chance to develop in an expanding organization, this is your spot. While a degree is preferred, a premium is placed on relevant work experience.

We are specifically looking for experience in:
- *Command & Control Systems
- *Software Development
- *Real-Time Programming
- *CS-1, CMS-2 Programming
- *Multi-Processing System

Experience in the following computers is desirable:
- *UNIVAC CP-642 A/B, 1230 AN/UYK–7
- *UNIVAC 901/1830/1832-A
- *Texas Instruments CP-967/UYK

For consideration, please send resume in confidence to:

JOHN CROWLEY

INTEGRATED SYSTEMS SUPPORT, INC.

3330 Pacific Avenue
Virginia Beach, Va. 23451

An Equal Opportunity Employer

SUBSIDIARY OF: SYSTEM DEVELOPMENT CORPORATION

POSITION ANNOUNCEMENTS | POSITION ANNOUNCEMENTS | POSITION ANNOUNCEMENTS | POSITION ANNOUNCEMENTS | POSITION ANNOUNCEMENTS

MANUFACTURING APPLICATIONS

EDP PROJECT MANAGERS
SYSTEMS ANALYSTS
PROGRAMMER ANALYSTS

We are a profitable, multidivision Fortune 500 manufacturer of communications and information handling equipment with headquarters in Cleveland, Ohio. Several unique positions have been created by growth and are devoted to the continuing development of an integrated data base and sophisticated manufacturing applications. A thorough understanding of Material Requirements Planning and its relationship to other systems is central to these tasks.

The successful applicant will have a demonstrated record in the following areas:

- Relating and working well with manufacturing and data processing personnel at levels both above and below these positions.
- Analyzing, specifying, and coordinating user requirements in data processing terms.
- Providing continuing user support through implementation, instruction, and follow-up.

Strong technical abilities are necessary in such areas as data base management (using DBOMP, CFMS, etc.), programming languages, (particularly COBOL, ASSEMBLER), and operating systems (DOS or OS). A degree, user experience in production or inventory control, and familiarity with on-line applications using a teleprocessing executive such as CICS are plusses.

If you are seeking a career opportunity with attractive salary and benefits, high growth potential and management visibility, forward your resume with salary history in confidence:

C.W. Peters
Harris Corporation
4510 East 71 Street
Cleveland, Ohio 44105

An Equal Opportunity Employer

NCR

ACCOUNTING COMPUTER DIVISION

NCR's newest, rapidly expanding division has requirements for professionals in the following positions:

COMPUTER ENGINEERS
- MINICOMPUTERS
- COMMUNICATIONS
- BUSINESS SYSTEMS
- LOGIC DESIGN • CIRCUIT DESIGN
- SYSTEMS FORMULATION
- SYSTEMS ARCHITECTURE

SYSTEMS AND PROCEDURES ENGINEER

ELECTRICAL ENGINEERS

MECHANICAL ENGINEERS

PACKAGING ENGINEERS

PRODUCT ENGINEERS
- PERIPHERALS AND MINICOMPUTERS

SYSTEMS SOFTWARE PROGRAMMERS
- FIRMWARE DEVELOPMENT
- MINICOMPUTER OPERATING SYSTEMS
- COMMUNICATIONS
- FILE MANAGEMENT
- ASSEMBLERS • COMPILERS

MICROPROGRAMMERS
- S-LANGUAGE • EMULATORS
- VIRTUAL MEMORY
- MINICOMPUTER ARCHITECTURE

DESIGN AUTOMATION ENGINEER

Let us tell you the full story of Wichita, Clean Air Kansas, and the employment opportunities at NCR's Accounting Computer Division...where everybody is somebody!

If qualified and interested in being interviewed for any of the above positions, please send resume including present and expected salary to Don Wilde, Professional Placement, P.O. Box 1297CN Wichita, Kansas 67201.

An Equal Opportunity Employer M/F

Senior Systems Software Programmer

Aetna Life & Casualty, one of the largest IBM users on the east coast (four 370/168's, two 370/158's, two 360/65's and a host of smaller 360 systems), has openings at the senior level in systems software programming. Applicants should have experience in OS/MVT internals/externals and possess expertise in Basic Assembler Language. Knowledge of any of the following would be an asset, but not an essential: VS2, HASP, ASP, TCAM, NCP, standalone dumps, COBOL. Please send resume with salary history to:

Craig B. Mackey
Employment Office
Aetna Life & Casualty
Hartford, Conn. 06115
An equal opportunity employer

Seeking Management Analyst and Systems Analyst/Programmer to develop computerized management information system for prosecutor's office.

Minimum requirements: B.A. in Math or Computer Science. Management Analyst must have work experience. Programmer must be able to analyze, modify and write COBOL programs.

Send resume to:
Department of the Attorney General
250 Benefit Street
Providence, R.I. 02903
Attention:
Research & Planning Unit

Customer Service Engineers

Jr. CE .....to$1100 mt.
CE ..... to $1300 mt.
Sr. CE ..... to $1500 mt.
Tech Spec. .....to$Plus mt.
Field Mgrs. ..... Sal Neg. mt.

We're specialists in "Customer Engineer" Extractions.

Bill Gill and Associates
5724 W. Diversey Av.
Chicago, Ill. 60639
(312) 622-7711

Vice President—Marketing: *Neal Wilder.* **Sales Administrator:** *Dottie Travis.* Computerworld, 797 Washington St., Newton, Mass. 02160. Phone: (617) 965-5800. Telex: USA-92-2529.

Northern Regional Manager: *Robert Ziegel.* **Account Manager:** *Mike Burman.* Computerworld, 797 Washington St., Newton, Mass. 02160. Phone: (617) 965-5800. Telex: USA-92-2529.

Eastern Regional Manager: *Donald E. Fagan.* **Account Manager:** *Frank Gallo.* Computerworld, 2125 Center Ave., Fort Lee, N.J. 07024. Phone: (201) 461-2575

Los Angeles Area: *Bob Byrne.* Robert Byrne & Assoc., 1541 Westwood Blvd., Los Angeles, Calif. 90024. Phone: (213) 477-4208.

San Francisco Area: *Bill Healey.* Thompson/Healey Assoc., 1111 Hearst Bldg., San Francisco, Calif. 94103. Phone: (415) 362-8547.

Japan: *Ken Suzuki.* General Manager, Dempa/Computerworld, 1-11-15 Higashi Gotanda, Shinagawa-ku, Tokyo 141. Phone: (03) 445-6101. Telex: Japan-26792.

United Kingdom: *Colin Hanmore,* c/o IDC Europa Ltd., 140-146 Camden St., London NW1 9PF, England. Phone (01) 485-2248. Telex: UK-26-47-37.

West Germany: *Otmar Weber,* Computerworld GmbH (8) Muenchen 90, Tegernseer Landstrasse 300, West Germany. Phone: (089) 690-70-52. Telex: W. Ger-52-81-08.

WANTED
HORSE TRADER

DEALING IN
COMPUTERS – PERIPHERALS – SYSTEMS – TERMINALS
NO TRAVEL REQUIRED
(617) 261-2750 712 BEACON ST.
BOSTON, MASS. 02215

AMERICAN USED COMPUTER CORPORATION

OVERSEAS

IMS INTERNALS
OS INTERNALS
IMS APPLICATIONS

Top Pay – Unlimited Career Opportunities
Professional Atmosphere – Challenging Technical Positions
Send resume and salary history to

TSC
2924 Red Lion Lane
Silver Spring, Md. 20904

DATA MANAGEMENT SPECIALIST

POSITION OVERVIEW

To create, maintain and assure the integrity and security of corporate computer data bases.

SPECIFIC RESPONSIBILITY

Design and write programs to initially load IMS Data Bases • analyze operational data and determine need for re-design and/or reorganization of data bases • provide backup protection for data base.

EDP FACILITY

Current facilities are two IBM 370/158 running VS-2. Core aggregate is 4 megabytes. Direct access storage devices number 32 (type 3330) and tape drives number 24 (model 3420).

REQUISITE SPECIALTIES AND EXPERIENCE

The successful candidate must possess:

- Knowledge of OS Data Management procedures
- Skill in IBM's BAL and PL-1
- Three years programming in OS-MVT
- One years experience in IBM-2 data base design, writing, DBD's and PSB's

THE COMPANY

We are a major company, headquartered in El Paso, Texas which is deeply involved in many facets of the hydrocarbon energy field. Our salaries are competitive and complemented by a comprehensive, fully paid benefits package.

PROCEDURE FOR APPLYING

Qualified candidates should provide an amplified resume of their educational and business accomplishments which includes past salary history and current requirements. Resumes will be treated in confidence and all inquiries answered. Resumes are requested by August 15th.

CW Box 4160
797 Washington Street
Newton, Mass. 02160
An Equal Opportunity Employer

SENIOR PROGRAMMERS

Corporate Staff

USE YOUR EXPERIENCE TO FULL ADVANTAGE

Major subsidiary of one of the largest chemical companies in the world seeks Senior Programmers with a minimum of 5 years solid programming experience to join a growing corporate staff

Responsibilities will include commercial, financial, and manufacturing systems using 370/145. Degree is preferred. DOS or OS experience acceptable, knowledge of both a definite plus. Pharmaceutical, polyester film, or petrochemical industry experiece is an asset, although not a definite requirement. A strong working knowledge of ANS COBOL is required.

Excellent starting salary, liberal benefits, excellent opportunities for advancement, stimulating professional environment. For prompt consideration, please send detailed resume to:

J.B. McIntire

ICI America Inc.
Wilmington, DE. 19899
An Equal Opportunity Employer m/f

POSITION ANNOUNCEMENTS | POSITION ANNOUNCEMENTS | BUY SELL SWAP | BUY SELL SWAP | BUY SELL SWAP

Itty Bitty Monopoly

Customer Service Engineers

We're specialists in ibm "Customer Engineer" Extractions

Salary $1300-$1800/month

Bill Gill And Associates
5724 W. Diversey Av.
Chicago, Ill. 60639
(312) 622-7711

Teaching Computer Science and Accounting in small liberal arts college. Basic FORTRAN, COBOL, RPG and 1130 assembler languages. Equal opportunity employer. Contact:

Dean John Bryden
Transylvania University
Lexington, Kentucky 40508

PROGRAMMER/ANALYST

Expanding modern 450 bed general hospital located on the SW Florida coast needs a qualified Programmer/Analyst with experience in DOS/VS, CICS/VS, BAL, COBOL/VS on an IBM S/370. Only those meeting qualifications need apply. Liberal fringe benefits provided. Send resume including salary history and requirements to:

D. Willard Taylor Jr.
Manager, Data Processing
Lee Memorial Hospital
P.O. Drawer 2218
Ft. Myers, Fla. 33902

SYSTEMS ANALYSTS PROGRAMMER ANALYSTS

We are looking for highly motivated individuals to work in a challenging, growth-oriented educational computer network in the New England region. The successful applicants should have good experience in on-line systems, and large data base management applications in the Student Records area. Send resume detailing professional and salary history and objectives.

CW Box 4170
797 Washington Street
Newton, Mass. 02160

FOR SALE OR LEASE REASONABLY PRICED

UNIVAC 1108/65K CORE

AVAILABLE WITH OR WITHOUT PERIPHERALS, INCLUDING VIII C TAPE DRIVES, 432 DRUMS, PRINTER, AND NECESSARY CONTROLLERS.

CW Box 3997
797 Washington Street
Newton, Mass. 02160

For Sale
BURROUGHS B520
On line financial system

Processor, Communications, 2 Disc Modules, Printer, Card Reader, 2 Tape Drives, and Console. Purchased as new-reconditioned from Burroughs, never installed because of merger.
Also have B200 series card system, and 11 TC700 terminals with seven data sets.

D.C. Firth
12805 Olson Memorial Hwy.
Minneapolis, Minn. 55441
(612) 546-9311

---

360 Model 30
AVAILABLE FOR IMMEDIATE LEASE

Any core size, CPU only or complete system including I/O set

For an immediate quote call
William O'Connell
Vice-President
(617) 266-4950

Bankers Leasing Corporation
1255 Boylston Street
Boston, Mass. 02215
Subsidiary of Southern Pacific Company

ASSISTANT TO DIRECTOR, INFORMATION SYSTEMS

Excellent position for person with strong background in Data Processing Management. This NYSE manufacturing corporation is headquartered in suburban Maryland, north of Baltimore. Duties include assisting the Director of Information Systems in project control, documentation, and systems design reviews. Must have IBM Systems background and at least 8 years experience. Degree preferred. Complete Company benefits. Salary commensurate with ability and experience. This new position offers the opportunity to realize full potential. Send complete, confidential resume with salary requirements to:

CW Box 4172
797 Washington Street
Newton, Mass. 02160
An Equal Opportunity Employer M/F

DPF INCORPORATED DPF INCORPORATED DPF INCORPORATED

buy • sell • lease • trade

Available:
IBM Systems 360/370

Special Offerings:
2302 Disk (Mod 4)
2303/2841 Drum, Control
2702 Communications CU
2844 Aux. Disk Control

dpf DPF INCORPORATED
141 Central Park Avenue South
Hartsdale, New York 10530
Write or call: Norman Usher, Director of Brokerage, (914) 428-5000

DPF INCORPORATED DPF INCORPORATED DPF INCORPORATED

DPF INCORPORATED DPF INCORPORATED DPF INCORPORATED

Buy Sell Swap

FOR SALE OR LEASE

Univac 9300 24K
2 8411 Disks
3 Tape Drives
600 LPM Printer
600 CPM Reader

Univac 1005
600 LPM Printer
600 CPM Reader

5 Univac Keypunches

1 1720 Sorter

Call or Write:
Robert Puopolo
Adams Drug Co., Inc.
75 Sabin Street
Pawtucket, R.I. 02860
(401) 724-9500 Ext. 272

FOR SALE 360/40's

G-128K #21944
H-256K #22048
HG-384K #21886

AVAILABLE NOW THRU AUGUST

with or without 1/0 sets and peripherals IBM 40 core avail. all increments

Call or write:
Jerry Olson
Comdisco, Inc.
2200 E. Devon
Des Plaines, IL 60018
(312) 297-3640

Member Computer Dealers Assoc.

-SALE- **360/65** -LEASE-

SYSTEMS AVAILABLE
1130
360/20
360/30
360/50
370/155

ECONOCOM, INC.
Subsidiary of Cook Industries Inc.
855 Ridge Lake Blvd.
P.O. Box 171116
Memphis, Tennessee 38117
(901) 767-9130
"MEMBER COMPUTER DEALERS ASSOCIATION"

I/O AVAILABLE
2401-5's
2401-6's
2501-B2
2520-B2
I/O Sets

FOR SALE

CPUs, PERIPHERALS, MEMORY

IBM 360
HON 200/2000
UNIVAC 9000
418
1108-*II*
MINICOMPUTERS

HONEYWELL 115/2
32K CPU
Console
2 Disk (I72)
4 Tape (20KC)
Card I/O
Printer (1100 LPM)

(617) 261-1100
AMERICAN USED COMPUTER CORPORATION
P.O. Box 68, Kenmore Station, Boston, MA 02215
Member Computer Dealers Association

ITEL is selling:

- 360/50HG
- 360/65 H
- 360/30E
- 360/40G
- DUPLEX 360/67IH w/2365's
- 370/145H
- 370/155I
- 370/155J
- 145 IBM CORE
- 155 IBM CORE
- 155 AMS MEMORY (2 meg.)
- 2365-2's
- I/O SETS
- 2314's (MOD 1's & A1's)
- 2816

ITEL is buying 135's, 145's, 155's and 165's.

Call the Computer Sales Corporation at ITEL.

In San Francisco, call Fred Hegeman at (415) 983-0410
or Dick Hynes at (415) 983-0278 or Bob Gulko at (415) 983-0388.
In Dallas, call Tom Brown at (214) 620-2787.

ITEL CORPORATION
One Embarcadero Center, San Francisco, California 94111

BUY SELL SWAP | BUY SELL SWAP | BUY SELL SWAP | BUY SELL SWAP | BUY SELL SWAP

buy lease **360/370** sell trade

CPUs
- 360/20-8K
- 360/25-24K
- 360/30s up to 256K
- 360/40 up to 384K

I/O
- 1403 Printers Models 2, 3, N1

MISC.
- IBM 360/30 Core All increments to 96K

DISK/TAPE
- 2314-1
- 2311s
- Memorex 2311s
- 2415-4
- 2804-2 Ctrl
- 2402-2 800 BPI

Call Collect. 612-546-4422

dataserv equipment inc.
400 shelard plaza o suite 415
minneapolis, mn 55426
Member, Computer Dealers Assoc.

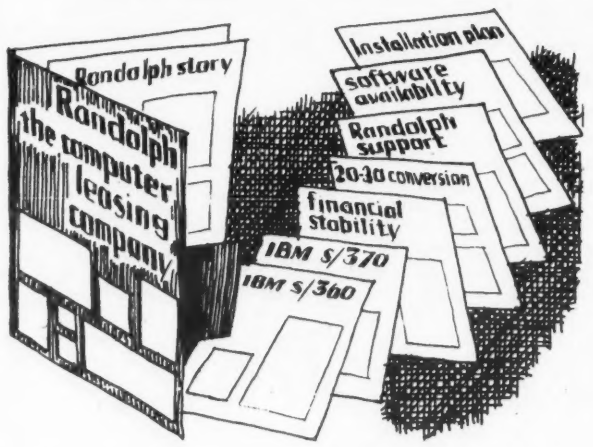
SYSTEMS 70 INCORPORATED DATA PROCESSING EQUIPMENT SPECIALISTS

2200 E. Devon Avenue
Des Plaines, Ill. 60018
(312) 827-8135

360/370

SYSTEMS 70 INCORPORATED DATA PROCESSING EQUIPMENT SPECIALISTS

Computer leasing by the book.



To find out more about Randolph's approach to computer leasing and customer support services, call or write your nearest Randolph office for our new four-color brochure, *Randolph . . . the computer leasing company.*

Northeast:
537 Steamboat Road
Greenwich, CT 06830
(203) 661-4200
(212) 931-1177

Box 1963
100 Federal Street
Boston, MA 02105
(617) 434-4043

621 Country Club Road
Avon, CT 06001
(203) 673-0435

20 Cornell Place
Englishtown, NJ 07726
(201) 446-6300

Mideast:
6110 Executive Blvd.
Rockville, MD 20852
(301) 770-6266

Southeast:
260 Peachtree St. NW
Atlanta, GA 30303
(404) 688-6932

Midwest:
8050 Hosbrook Rd.
Cincinnati, OH 45236
(513) 793-6060

625 North Michigan Ave.
Chicago, IL 60611
(312) 787-4224

Southwest:
1545 W. Mockingbird Lane
Dallas, TX 75235
(214) 637-3680

6440 Hillcroft, Suite 108
Houston, TX 77036
(713) 666-9464

West:
One Wilshire Blvd.
Los Angeles, CA 90017
(213) 680-9195

525 University Ave.
Palo Alto, CA 94301
(415) 327-2780

530 "B" Street
San Diego, CA 92101
(714) 232-6401

RANDOLPH COMPUTER COMPANY
Division of Firstbank Financial Corporation
A subsidiary of the First National Bank of Boston
Member of Computer Lessors Association

360/20
Disk - Tape - Card
Buy - Sell - Trade - Lease
Specialists in Model 20
CMI Corporation
23000 Mack Avenue
St. Clair Shores, Mich. 48080
(313) 774-9500
Member Computer Dealers Association

COMPUTER SALES, INC.
901 Office Park Plaza
Oklahoma City, Okla. 73105
360-370-SYSTEM/3
BUY-SELL-LEASE
Immediate Funds for Long Term 370 Financing
Please call or write:
Okla. City (405) 848-8691
St. Louis (314) 727-7010
Houston (713) 444-0246

FOR SALE
Burroughs Accounting Computer for sale.
Programming, tape/card reader, tape punch.
Excellent condition
Call Mr. Wiley
617-475-8160

ACS
UNIT RECORD SALE
SALE OR LEASE
557 Interpreters
083 Sorters
088 Collators
085 Collators
403 W/CAD
519 W/20 Positions
Of Mark Sense
Member Computer Dealers Assoc.
ACS Equipment Corporation
8928 Spring Branch Drive
Houston, Tx 77055
(713) 461-1333

FOR SALE
or
LEASE
360-30
32K
CORE UPDATE
32K to 64K
Call or Write
Time Oil Co.
2737 W. Commodore Way
Seattle, WA 98199
(206) 285-2400

CONFIDENTIAL BOX SERVICE FOR ADVERTISERS who do not wish their names or addresses to appear in their ads, *Computerworld* offers a confidential box service. To take advantage of this service, simply state in your initial order that you would like a "blind" ad. *Computerworld* will then assign your ad a box number and forward all replies. The cost for this extra service is only $1 per ad per insertion, no matter how many replies are received.

FOR RESPONDEES who hesitate to reply to a "blind" ad because there are certain individuals or firms to whom you do not want to reply, *Computerworld* offers a screening service at no cost. Simply address your reply to the box number specified, attach a separate list of such names, and put both in another envelope addressed to: Confidential Box Service, Computerworld Advertising Dept., 797 Washington St., Newton, Mass. 02160.

WE BUY
SELL, RECONDITION
-TTY-
and data communications equipment
Also needed:
- PRINTERS CENTRONICS 101A
- CRT HAZELTINE, DATAPOINT, BEEHIVE
- TELETYPE® MODEL 33, MODEL 32

CALL
AC 214-252-7502
TWX 910-860-5761

vardon & associates, inc.
A Pioneer Texas Co.
930 N. Beltline Suite 140 • Irving, Texas 75061

FOR SALE OR LEASE
360/30 2311
1401 I/O Set
Corporate Computers, Inc
115 Mason Street
Greenwich, Conn. 06830
(203) 661-1500
Member Computer Dealers Association

UNIVAC 9400 SYSTEM-98K
4 Disc and 2 tape Drives
2-1004 III Processors
Communication Adaptor
Available: Sale or lease Sept. 1, 1974

CDC 160 A SYSTEM 8K
405 Card Reader
606 Tape Drives with Controller
IBM 523 Card Punch with Controller
Printed Circuit Cards for CDC 1604 and 160 A and Peripheral.
Available: Immediate Sale.

EDP PRODUCTS, INC.
EDP PRODUCTS, INC., (714) 453-4644
11689 SORRENTO VALLEY ROAD, SAN DIEGO, CA. 92121

INVITATION FOR BIDS

The Waltham Housing Authority will accept bids for professional and computer services which will result in the automation of its Tenant Accounting System and Tenant Data File. Sealed bids will be received by the Waltham Housing Authority, 110 Pond Street, Waltham, Mass. until 2:00 p.m. E.D.S.T., August 9, 1974, at which time they will be publicly opened and read aloud.

Specifications are on file and may be examined at the office of the Waltham Housing Authority, 110 Pond Street, Waltham, Mass.

No bid shall be withdrawn for a period of thirty days subsequent to the opening of the bids without the consent of the Waltham Housing Authority.

Receipt of Invitation to Bids by any contractor shall not be construed as recognition by the Waltham Housing Authority of such Contractor's adequate qualifications to perform the work contemplated.

WALTHAM HOUSING AUTHORITY
By William E. Costello, Chairman

---

360 Model 40
AVAILABLE FOR IMMEDIATE LEASE
Any core size, CPU only or complete system including I/O set
For an immediate quote call
William O'Connell, Vice-President
(617) 266-4950
Bankers Leasing Corporation
1255 Boylston Street
Boston, Mass. 02215
Subsidiary of Southern Pacific Company

FOR SALE
1004 UNIVAC CARD PROCESSOR
Model C, 62 Step, 132 Print Positions. Use either 80 or 90 Column, Cards. $3,500.00
BROTHERHOOD MUTUAL INSURANCE COMPANY
1615 Vance Avenue
Fort Wayne, Indiana 46805
Phone: (219) 483-3112
Wilbur J. Snyder

---

don't LEASE!
UNTIL YOU FIND OUT WHY LEASING FROM THE FULL-SERVICE COMPANY IS DIFFERENT....

AVAILABLE IMMEDIATELY:
360/40H WITH I/O SET
360/50 I WITH I/O SET
UNIVAC 1004

CALL STEVE ELIAS AT (213) 678-0311
OR WRITE TO:
CSC
COMPUTER SCIENCES CORPORATION
650 N SEPULVEDA BLVD
LOS ANGELES, CALIFORNIA 90245
Major Offices and Facilities Throughout the World

ALWAYS UP & RUNNING
LEASING, BUYING, SELLING!

WANTED
2040 G and H
Calcomp single density drive
Calcomp dual density drive

SALE OR LEASE
2030 with I/O set
CDC 6603 drum

BOOTHE Computer. • Don Bell • (415) 989-6580

BUY SELL SWAP | BUY SELL SWAP | BUY SELL SWAP | BUY SELL SWAP | BUY SELL SWAP

SAME DAY SHIPMENT
Minis & Peripherals
PRINTERS
"BRAND NEW"
DATA PRODUCTS
2440 — 700 LPM
2470 — 1250 LPM
MDS 4320-300 LPM
ALSO
Centronics, Potter, CDC
A.B. Dick, IBM, HIS, Univac
(617) 261-1100
Send for Free Report "Maintenance of Computers"
AMERICAN USED COMPUTER CORP.
P.O. Box 68, Kenmore Sta.
Boston, MA 02215
member Computer Dealers Association

Before You Buy — Lease Sell — 360, 370, 1401 IBM Unit Record Equip. Please Call or Write
COMPUTER CLEARING CORPORATION
5025 N. Central Expressway
Suite 3046 Dallas, Texas 75205
Telephone (214) 528-5087
18 Years Experience, and--
"We guarantee delivery at a fair market price."
George Jachimiec, President

FOR SALE
370/145
Ser. No. 10124
Available Now
As Model GE or H
Features
3274 Direct Control
3621 EMER Power-off
6982 Sel. Chan. 2nd
6983 Sel. Chan. 3rd
7855 3215 Attach.
8810 Word Buffer
3215 Console
Call or Write
Tom Maddox
Comdisco, Inc.
2200 E. Devon
Des Plaines, IL 60018
(312) 297-3640
Member Computer Dealers Assoc.

360/65
FOR SALE OR LEASE
370/155 WANTED
360/65 for sale or lease. Available with IBM or OEM memory, any number of selector channels. Available with 7094, 7080, or 7074 compatibility. *Also available on month-to-month basis.*
2365-2's available for sale, lease, or month-to-month lease.
370/155 wanted to purchase, for early delivery. Will consider any specifications, the larger the better. Will buy with IBM or OEM memory.
IPS
IPS COMPUTER MARKETING CORP.
467 Sylvan Avenue,
Englewood Cliffs,
New Jersey 07632
(201) 871-4200,
TWX (710) 991-9677
"MEMBER COMPUTER DEALERS ASSOCIATION"

OAC buys, sells and leases
UNIT RECORD EQUIPMENT
All Models Available
Refurbished
Under IBM MA
IBM COMPUTERS
All model 360/20's, 360/30's 40's, 50's, and 65's. 370's and System 3's. All peripherals.
1401 SYSTEMS
Call: Don Norris
Jim Bickle
DATA AUTOMATION CO. INC.
4858 CASH ROAD
DALLAS, TEXAS 75247
(214) 637-6570
Member Computer Dealers Assoc.

145
Serial #10095
For Sale or Lease
By Owner
Available September 1, 1974
I/O Sets also available
Contact: Harry Blair
Computer Installations Corp.
(713) 524-1401

Lease Buy Sell
DEAL WITH PROFESSIONALS IN PLACEMENT OF PRE-OWNED EQUIPMENT
360/370
"The Nations Largest Wholesale Dealer"
COMPUTER WHOLESALE CORP.
Suite 441-447
National Bank of Commerce
New Orleans, La. 70112
(504) 581-7741

ACS
WANTED
IBM 029
KEYPUNCHES
FOR SALE
8K & 12K 1440
DISK SYSTEMS
7335 TAPE DRIVE
FOR 1440 SYSTEM
Member Computer Dealers Assoc.
ACS Equipment Corporation
8928 Spring Branch Drive
Houston, Tx 77055
(713) 461-1333

1401
Several Systems Available With or Without Tape Drives
CMI Corporation
23000 Mack Avenue
St. Clair Shores, Mich. 48080
(313) 774-9500
Member Computer Dealers Association

TLW
360-370 market place
BUY — SELL — LEASE
TLW COMPUTER INDUSTRIES INC.
ATLANTA: 3570 American Drive, Atlanta, Ga. 30341
404-451-1895 TWX 810-757-3654
CHICAGO: 312-295-2030
SAN FRANCISCO: 408-249-0110
LOS ANGELES: 213-373-6825

We Need: 1419, 2314 MOD A-1
BUY SELL LEASE
FOR BETTER VALUE LOOK TO:
Available: 360/40, 2314 — MOD I, 2 channel switch
cac
COMPUTER ACQUISITIONS COMPANY
P.O. Box 80572 Atlanta, Ga. 30341 (404) 458-4425

WANTED
BURROUGHS L SERIES
TC 500, A149, A150
NCR 31, 32, 41, 42
481-482
FRIDEN Computypers and Flexowriters
IBM 735 I/O Terminals
Call Stuart Rubenstein
I.O.A. Data Corp.
383 Lafayette St., N.Y. 10003
(212) 673-9300
Member Computer Dealers Assoc.

BUY SELL LEASE TRADE
360/40 SYSTEM
128K, 256K or 384K
3237, 4427, 6980, 6981,
7520, 7920 & 1052-7
Available: August 15, 1974
Serial Number 21886
I/O Set * 2314-1 * (4) 2401 Tapes
Miscellaneous Available
2361 Large Core Storage
2701 Data Adapter Unit
3330-1 Disk Drives
3830-1 Controller
2420-7 320KB Tapes
360/50, 360/65, 370/155
Member, Computer Dealers Assoc.
COMDISCO
2200 E. Devon Ave., Des Plaines, Ill. 60018 • Ph. 312-297-3640 • TWX 910-233-2478

Equipment Delivered Before You Pay
pcm
NOW THERE'S ANOTHER WAY TO GO
PIONEER COMPUTER MARKETING
Assets: Wholly owned subsidiary of Pioneer Texas Corporation, a listed firm on the American Stock Exchange.
Inventory: Complete inventory of IBM equipment including systems 370-135-145-155 (see our 370 Ad in this issue). Also 360/20, 30, 40, 50 & 65. Also 1403, 2540, 2821 and all models of Tape and Disk Drives. We also retain a complete inventory of all types of second generation equipment ranging from 029's to 557's.
Quality: All our equipment is guaranteed for a maintenance contract at your location and completely reconditioned prior to shipment.
Size: National marketing organization and over 1,000 customers. References furnished upon request.
Stability: Adequate financial resources for immediate action.
LET US HELP SAVE YOU MONEY IN BUYING AND SELLING EQUIPMENT.
pcm
Pioneer Computer Marketing Corporation
2636 Farrington
Dallas, Texas 75207
(214) 637-0950

New! **1401 SIMULATOR**
"SIM14" T.M.
NOW AVAILABLE FOR 360-50-65 USERS
- EXECUTES UNDER BOTH DOS & OS
- SUPPORTS 1401 UNIT RECORD, TAPE AND DISC DEVICES
- JCL AND FILE COMPATIBLE WITH CS30-40
- SELF RELOCATING FOR MULTIPLE PARTITION EXECUTION
- THRUPUT SPEEDS EQUAL TO CS40
- PROVEN PRODUCT BY CUSTOMER USE
- TAKE ADVANTAGE OF 360-50-65 LEASE PRICES WITHOUT HAVING TO REPROGRAM ANY 1401 PROGRAMS

Call or Write
DEARBORN COMPUTER LEASING CORPORATION
Subsidiary of Dearborn-Storm Corporation
4849 No. SCOTT, SCHILLER PARK, ILLINOIS 60176 312 671-4410

FOR SALE
3-360/30 64K 1.5 CPU
1051-1052 FOR LESS THAN 8 MOS. I.B.M. Rent (Ea.) 360/50H. 3-Ch.
(1) 1403-M2 (1) 2804-1
(1) 2821-1 (5) 2401-M2-9Tr.
WANTED All IBM Equip.
N.C.R. 31-32 Burroughs L Series
CROMWELL ASSOCIATES
23 Rutgers Road
Jackson, N.J. 08527
(201) 363-8012/8026

FOR SALE OR LEASE
IBM
1401 SYSTEMS
with or without Tape Drives & Disks
Savings in thousands
Member Computer Dealers Assoc.
D.P. Equipment Marketing Corp.
260 W. Broadway, N.Y. N.Y.
CALL (212) 925-7737 Ext. 1

BUY SELL SWAP | BUY SELL SWAP | BUY SELL SWAP | BUY SELL SWAP | BUY SELL SWAP

Available for short-term lease

2-370/135's

loaded or to suit

1-370/155

any capacity

Principals apply only

CW Box 4138
797 Washington St.
Newtonville, Mass. 02160

SYSTEM 360/370 | dearborn computer leasing corporation

A business relationship you can't afford to be without . . .

- Lease Terms to Fit Your Needs
- Field Engineering Support
- Systems Engineering Support
- Well Trained Marketing Staff
- Buy and Sell-360s
- Subleasing
- Member, Computer Lessors Association

Dearborn Computer Leasing Corporation
a subsidiary of Dearborn-Storm
4849 North Scott Street / Schiller Park, Illinois 60176 Area 312 / 671-4410

---

370 SALE

Below are three (3) CPU's for sale from PCM. These CPU's are available for inspection by you, the customer. The serial numbers are shown and inspection is available so you will not be mislead by quotes for machines which are available until you request to see them.

3135(GF) 196K #60111
Direct Control
1st Selector Channel
2nd Selector Channel
3210 Adapter
3046(01) Power Unit

3145(HO) 256K #10564
Second Selector Channel
Third Selector Channel
Word Buffer
3215 Adapter

3155(100) 512K #10738
Direct Control
Third Block Multiplexer
Fourth Block Multiplexer
3215 Adapter
3360(03) Core Storage #21448
3215(01) Printer-Keyboard #12766

FOR MORE INFORMATION CALL OR WRITE
Pioneer Computer Marketing Corporation
2636 Farrington Street
Dallas, Texas 75207
(214) 637-0950

For Lease
August 1, 1974

Burroughs 3500

the complete system: processor, consoles, control units, tapes, disks, card reader and punch and two high speed printers.

Charles Dieges (212) 956-2858
Steve Zakeskie (212) 956-4170

Talcott Computer Leasing
Division of James Talcott, Inc.
1290 Avenue of the Americas
New York, N.Y. 10019

Member - Computer Lessors Association

EQUIPMENT WANTED

370/145M
370/158J or K
370/165 any core size
370/168 will accept purchase option

EQUIPMENT AVAILABLE

360/65—will configure to your needs.
Evergreen continues to have 370 lease money available.
Contact Bill Rummler
Vice President/Leasing
Member: Computer Dealers Association

EVERGREEN COMPUTER AND FINANCIAL, INC.

CORPORATE HEADQUARTERS:
One Appletree Square
Bloomington, Minn. 55420
(612) 854-2000

REGIONAL OFFICES:
2720 Des Plaines Ave.
Des Plaines, Ill. 60018
(312) 298-7890

525 University Ave.
Suite 1307
Palo Alto, Calif. 94301
(415) 321-1798

360-30 2314

Available for lease: LATE DECEMBER 1974 System includes:

C.P.U. 64K
2 Channel selectors
Storage protect
Decimal arithmetic
1052 Keyboard console
1403-N1 printer (1100 L.P.M.)
2540 reader/punch (1000 C.P.M.) Punch/read/feed
2821 Control unit
2314 Model 1, 8 drives and 1 reserve
2316 Disk packs (10)

Entire system may be rented for 2 Or 3 years below the market rental value with attractive purchase option after the 3rd year.

Contact:
Morris A. Fusco, D.P. Mgr.
Publix Shirt Corporation
350 Fifth Avenue
New York, N.Y. 10001
Tel: (212) OX 5-4700 Ext. 215

CROSS buys, sells and leases all

360's 370's

360/20, 30, 40, 50 and 65's
370/135's, 145's and 155's

SYSTEM/3

UNIT RECORD EQUIPMENT

ALL PERIPHERAL DEVICES

LEASE FINANCING AVAILABLE
(516) 487-9812

CROSS COMPUTER CORPORATION
505 Northern Blvd. Great Neck, N.Y. 11021
TELEX 12028
MEMBER COMPUTER DEALERS ASSOCIATION

---

360 • BUY • SELL • TRADE • LEASE/SUBLEASE • 370

AVAILABLE IMMEDIATELY

CDC 2314
4 spindles & control

360/40
configured to your spec.

IBM 90 KB TAPES

LUNCEFORD & ASSOCIATES
Valley View Bank Bldg.
Overland Park, Kan. 66212
(913) 381-7272
Member Computer Dealers Assoc.

Warehouse SALE

Complete liquidation of 20,000 sq. ft. CDC equip.

WEEKLY SPECIAL
#863 Drum Storage Units
7 Pieces Available
Byrant Drums & Heads
$10,000 ea./offer

Send for complete list.
Contact D.A. GRAY at
Liberman Dist. Co.
1639 University Ave.
St. Paul, Mn., 55104
(612) 646-8653

360/40 128K

loaded with features

1052

Serial # 22580

Priced for quick sale
Immediate delivery

tbi®
TBI Equipment Div.
Time Brokers, Inc.
500 Executive Blvd.
Elmsford, N.Y. 10523
(914) 592-4065

Nationwide broker/dealers of DP equipment & computer time
Boston, Chicago, Elmsford, N.Y., Los Angeles, New York City, Washington, D.C. and San Francisco
Member Computer Dealers Association

360/20

Card-Disk-Tape Systems
30-60 Day Delivery

ECONOCOM, INC.
Subsidiary of Cook Industries, Inc.
855 Ridge Lake Blvd.
Memphis, Tenn. 38117
(901) 767-9130
MEMBER COMPUTER DEALERS ASSOCIATION

LBI

SPECIALISTS IN 370 CORE 3360/003 3360/005

BUY • SELL TRADE • LEASE ANY EDP EQUIPMENT

Leasing Dynamics Inc.
3101 Euclid Ave.
Cleveland, Ohio
216-687-0100

1600 Broadway
New York, New York 10019
(212) 541-6340

029 029 026 026

Buy·Sell
LEASE
IBM 360/20

SIMPLICITY COMPUTER

FORSYTHE McARTHUR ASSOCIATES, INC

3830 & 3330 Disk Equipment
Now Available at 78% of
IBM's List Price

• 919 North Michigan Avenue • Chicago, Ill. 60611 •
Telephone: (312) 943-3770 • Telex: 255161
Member, Computer Dealers Association

WHEN BUYING OR SELLING GO GREYHOUND

FOR SALE
360/30's, 360/40 CORE and 2314's
2860 Model 3

WANTED
All 370's, 360/65's and 360/50's

GREYHOUND COMPUTER CORP.

Home Office
Director of Equipment Sales
Greyhound Tower
Phoenix, Arizona 85077
(602) 248-5978

Dallas Office
M. Wm. (Bill) Tucker, Jr.
Equipment Sales Manager
7540 LBJ Freeway
Dallas, Texas 75240
(214) 233-1818

FOR SALE

Tri-Data
4196 Cartrifiles
PDP 8M's 4K Memory

Jerry DeBaun
Donald E. Grempler
Realty, Inc.
(301) 825-6400

---

we buy and sell

IBM Unit Record Machines
IBM 735 I/O Terminals
NCR 31 - 32 - 33 - 395 - 400,
NCR 480 - 481 - 482 - 450
BURROUGHS - L - SERIES

marion
84 Kennedy St.
Hackensack, N.J.
07601
(201) 343-4554

IBM UNIT RECORD EQUIPMENT | **IBM COMPUTERS**

024	083	402	523
026	084	403	548
029	085	407	552
056	087	408	557
077	088	514	602
082	089	519	604

We Buy, Sell or Lease
360 - 20
System 3
1130

Special Sale
029's
All Models

Big Savings — up to 50% on Short Term Rentals

Call us for all your needs, we buy, rent and sell all types of IBM unit record equipment. Over 12 years of serving commercial and government requirements. All equipment rebuilt at our own factory and guaranteed for IBM MAINTENANCE. Contact: John Fennell V.P. for proposal. 212-689-4747 Cable: Leasatron, New York Telex: 423857 LMC UI 116 East 27th Street New York, New York 10016

LMC Data, Inc

BUY SELL SWAP

FOR SALE OR LEASE

024-$350; 026-$1300; 047-$2700; 056-$250; 077-$550; 082-$900; 083-$2300; 085-$1400; 088-$3300; 188-$16,000; 402-$1300; 403-$1400; 407-$3300; 514-$900; 519-$1300; 526-$2200; 548-$2000; 552-$1400; 557-$3700; 602-$400;

729 (6) $1600
1401-4K System-$11,000

Member Computer Dealers Assocation
THOMAS COMPUTER CORPORATION
Suite 3807A
600 N. McClurg Court
Chicago, Illinois 60611
(312) 944-1401

WANTED

TELETYPE® EQUIPMENT
New • Used • Parts
– ALSO –
• Data Terminals • Peripherals
• Mini-Computers • Modems

Contact us for data terminal sales, service, supplies and rentals.

TERMINAL SYSTEMS INC.
11300 Hartland St.
N. Hollywood, Calif. 91605
213-769-6772 TWX 910-499-2675

FOR SALE BY OWNER
BURROUGHS B-1714
AVAILABLE SEPT. '74

49 KB memory
2.3 million bytes disk drives (4)
300 LPM drum printer
300 CPM 80 col. reader
300 CPM 96 col. reader/punch data recorder

Call or write:
COMPUTER SYSTEMS CENTRE
Subsidiary of Quaker Business Associates
234 N. Sixth Street
Reading, Pa. 19601
(215) 373-5146

FOR SALE
SINGER
FRIDEN COMPUTYPER
Model 5610
Ser No. 2004
2201 Flexwriter
2315 Tape punch has been in storage

$1500
John Finnegan
26 Kimberly Ave.
Buffalo, N.Y. 14220

FOR SALE
I.B.M. 360/50
512 K

City & County of San Francisco, Calif.
Request Bid Forms from City Purchaser
Room 270, City Hall
San Francisco, Calif. 94102
(415) 558-5026
Bids to be opened Aug. 2, 1974 at 1 PM

WANTED
2911
CHANNEL SWITCH
Immediate Delivery

Managistics Inc.
32-31 57 Street
Woodside, N.Y. 11377
(212) 721-9100
Donald Levy

FOR SALE

BURROUGHS:

L5000	$358/mo
4005 Reader	99/mo
TC500	278/mo

FRIDEN:
8 Model 2301 Flexowriters

Mr. Allen
GENERAL SERVICES CORP.
50 Hunt Street
Watertown, MA
(617) 926-3800

Time for Sale

MASSACHUSETTS

COMPUTER TIME BROOKLINE
370/135
1st and 2nd Shift
96K DOS or DOS/VS
Power 2

5-3330	1-2501
2-3420	1-1442
1-1403	

$50.00 per hour
Contact: Mr. K. Coleman
(617) 738-6410

ILLINOIS

IBM 360/370 USERS
COMPUTER TIME AVAILABLE

370/158
2 meg, 3330 (32m), 2314 (16m), 12 3420-5 d.d. tape OS/VS2, RJE, TSO, ATS, DOS emul.
24 Hours — 7 Days

370/155
2 meg, 3330 (8m), 2314 (8m), 12 3420-5 d.d tape

370/135
240K, 3330 (4m), 2314 (8m), 6 3420-5 d.d. tape

370/135
144K, 2314 (8m), 6 3420-5 d.d. tape

360/40
128K, 2314 (8m), 5 2401-2 tape

360/30
64K, 4 2311's, 5 3420-3 d.d. tape

FOR FURTHER INFORMATION CALL PAUL SERRIS
(312) 346-1331
computer research company
200 N. Michigan Avenue Chicago, Ill. 60601
Largest Computer Time Sales Co.

370/158
Virtual
OS-MVT-HASP
DOS-VS1-VS2-
CMS

HF/II	APT	MPSX
ICES	BLISS	CROSSTABS
PICS	PAYROLL	SSP
MPS	PLAN	SAS
	BMD	PROJECT II

PAYROLL
INVENTORY CONTROL
ACCOUNTS PAYABLE
ACCOUNTS RECEIVABLE
GENERAL LEDGER

Order Entry Systems
Hyperfaster, Amigos

General Purpose Simulation System
Continuous System Modeling Program
Urban Transportation Planning System 360

TIME SHARING
REMOTE BATCH
BLOCK TIME

Your Programs or Ours

STATTAB
A Division of Statistical Tabulating Corp.
Chicago, Illinois
(312) 346-7300
Jim Hancock

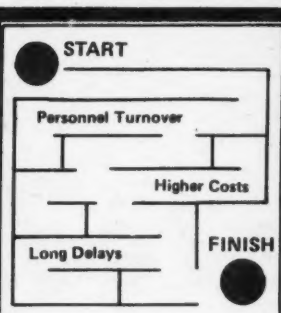
TIME FOR SALE

NEW YORK

370/158
VS2-HASP/RJE, TSO
DOS Emulation
Disks-(18) 3330, (3) 2319
Tapes-(16) 3420 mod. 7
Printers-(5) 1403, (1) 3211
Excellent Technical Support
Very attractive rates on all shifts
Contact: Stu Kerievsky
(212) 564-3030
Datamor
132 West 31 St.
New York, N.Y. 10001

Thomas National, Inc.
1775 Broadway, N.Y.C.
370/158
DATACENTER
OS-VS — RJE
And Other Communications
Automated Photo Composition
DOS Emulation
3330's and 2314's
Systems and Programming Support
Data Entry Services
Convenient 57th St. Location
Open 24 Hours Per Day
Call (212) 765-8500

Software for Sale



Infonational has the easy solution to your accounting systems puzzle.

If you're the one with the problem of developing financial systems for your company, let us help you out. Instead of expensive and time consuming custom development, install an Infonational:

- GENERAL LEDGER
- ACCOUNTS PAYABLE
- ACCOUNTS RECEIVABLE/ SALES ANALYSIS
- FIXED ASSET

Solving your FINANCIAL SYSTEMS problems is our business.

INFONATIONAL
THE FINANCIAL SYSTEMS COMPANY

Boston (617) 769-5942
Chicago (312) 332-6738
Dallas/Forth Worth (817)732-6603
New York (212) 489-1660

6626 Convoy Court
San Diego, Ca. 92111
(714) 560-7070

CLASSIFIED INFORMATION
Computerworld Classifieds can help you find what you want, or sell what you don't.

SOFTWARE FOR SALE

QUERY3
COMPUTING's PREMIER INQUIRY SYSTEM

QUERY3
Simple English Language
Writes Multiple Reports
Powerful Selectivity
Full Computation Capability
Can Produce Output Files
Multiple Input File Option
Table Look-Up
File Security
Blue Ribbon User's List
Runs on Most Computers

AZREX
AZREX INC.
215 Middlesex Turnpike
Burlington, Mass. 01803
(617) 272-8750

TAXBREAK
***
Payroll tax calculation module
***
Calculates payroll withholding taxes for 50 states, federal, FICA and cities. COBOL. $875 complete.
Maintenance service on tax changes available for $225 per year.
ARGONAUT INFORMATION SYSTEMS, INC.
2140 Shattuck Ave.
203
Berkeley, CA. 94704
(415) 845-7991

ACCOUNTING SYSTEMS
PAYROLL
GENERAL LEDGER
ACCOUNTS PAYABLE
INVENTORY
ACCOUNTS RECEIVABLE
IBM SYSTEM/3 USERS
IBM 360-70 USERS
RPG II BAL COBOL
Certified Software Products Inc
3140 Harbor Lane North
Minneapolis, Minn 55441
612-546-6919

SYSX
LOOKING FOR SOFTWARE?
Free Software Search and Package Appraisal Service

Our job is to help you locate the software packages which best meet your needs. There is no charge to you for this service. Write on your company letterhead or call:

Systems Exchange Co.
1034 Colorado Ave.
Palo Alto, Calif. 94303
(415) 328-5490

SYSX

SORTUPDT
CARD SORT/FILE UPDATE SYSTEM

In one step, IBM DOS users can sort a card file and/or update a card image tape or disk file.
—Up to 12 sort keys in any seq
—Any blocking factor on I/O files
—Processes adds, chngs, or delets
—Unconditional lifetime warranty
$500.00

Computer Concepts Corporation
6244A New Peachtree Road
Atlanta, Georgia 30340
(404) 451-9165

MMS Accounts Receivable
Eliminates the Long Wait.

- Database Design — All Cobol
- Open Item or Balance Forward
- Multi-company
- Flexible Aging
- Simplified Cash Posting

SOFTWARE INTERNATIONAL
Elm Square, Andover, Mass. 01810
(617) 475-5040

MSA GENERAL LEDGER
WHY HAVE OVER 700 CLIENTS PURCHASED MSA SYSTEMS?

WHY HAS MSA SOLD OVER 140 GENERAL LEDGER SYSTEMS IN THREE YEARS?

HERE'S WHY!

- EFFICIENT REPORT WRITER
- STATISTICS MANAGEMENT
- FLEXIBLE BUDGETING
- ACCOUNT ANALYSIS
- COST ALLOCATION
- RESPONSIBILITY AND PROFITABILITY REPORTING
- UNLIMITED NUMBER OF REPORTING LEVELS
- PROJECT ACCOUNTING
- DIRECT, FULL ABSORPTION OR INCREMENTAL COSTING
- CURRENCY CONVERSION

USERS BY PRODUCT
PAYROLL/PERSONNEL-245
FIXED ASSETS-150
ACCOUNTS PAYABLE-60
INVENTORY CONTROL-25
OTHER BANK SYSTEMS-80

Write or Call to Compare
William M. Graves
Management Science America
3445 Peachtree Road, N.E., Suite 1300
Atlanta, Ga. 30326

MSA

Atlanta	404—262-2376
New York	201—871-4700
Chicago	312—323-5940
Los Angeles	213—475-9726
San Francisco	415—328-1700

NCR, CDC Earnings Take Different Paths

Earnings at NCR Corp. and Control Data Corp. (CDC) took different paths, although revenues at both firms increased for the second quarter and six-month periods.

NCR, reaping the results of reorganizational moves and new products, posted record second-quarter results wth earnings rising 49% and revenues 10% from the same period a year ago. The six-month results were also records, as earnings outpaced revenues by a 53% rise over last year's results, while revenues rose 8% above the level of the same 1973 period.

Chairman William S. Anderson attributed the earnings improvement to NCR's domestic operations which benefitted from greater manufacturing and marketing productivity and more favorable margins on recent product releases.

CDC, however, bowing to the winds of high interest rates, reported lower earnings on higher revenues for its second quarter.

"Although the volume of business in both computer and financial services operations is expected to meet or exceed budget objectives for the year, unless there is relief from the current high level of short-term interest rates, consolidated earnings for 1974 may not equal 1973 results," observed Chairman William C. Norris.

At NCR, quarterly earnings reached $19.8 million or 81 cents a share compared with $13.4 million or 58 cents a share a year ago.

The 1974 results include a $750,000 special credit while in 1973 there was a $900,000 special credit.

Second-quarter revenues rose to $477.3 million from $433.4 million last year.

Six-month earnings at NCR rose to $31.9 million or $1.32 a share compared with $20.8 million or 90 cents a share in the year-ago period.

Revenues reached $864.5 million from last year's $800.8 million.

International earnings were somewhat below the level of last year, Anderson said, primarily because of lower earnings in the United Kingdom which was affected by the energy crisis.

Incoming business in the second quarter was 24% ahead of the 1973 period and in June both the domestic marketing and the international divisions recorded the largest volume for any single month in NCR's history, Anderson said.

He cautioned that the percentage earnings gain anticipated for the last half of 1974 will not match the percentage increase reported for the first half, since the last half of 1973 benefitted from substantial cost reductions inaugurated in the first half of 1973.

At CDC, consolidated earnings in the second quarter declined to $11.9 million or 72 cents a share from $15.6 million or 95 cents a share in the year-ago period.

Both computer operations and the Commercial Credit subsidiary suffered from the effects of high interest rates, Norris said, adding that the average prime rate for the quarter was 11.44% compared with 7.04% for the same period a year ago.

Revenues from the computer operations sector rose to $283.3 million from $231.3 million in the 1973 second quarter but earnings dropped to $3 million from $5.2 million a year ago.

Higher short-term interest rates resulted in an interest expense for the computer operations of $15.2 million compared with $9.1 million a year ago. CDC is raising prices which is expected to help operating margins later in the year, the firm said.

The Commercial Credit unit's revenues rose to $162.4 million from $135.4 million last year, but its earnings also declined, to $8.9 million compared with $10.4 million last year.

For the six months, revenues from computer operations rose to $532.7 million compared with $438.3 million last year.

Earnings declined to $7.5 million from $8.9 million in the 1973 period.

Consolidated six-month earnings totaled $26.7 million or $1.63 a share compared with $32.3 million or $1.98 a share last year.

Orders for computers are "tending more to leases than to purchase," Norris stated.

Telex Losses, Revenues Rise for Year

TULSA, Okla. – Larger losses and revenues than last year were the story for Telex Corp.'s 1974 results as the firm awaited the outcome of appeals on Judge A. Sherman Christensen's judgment that Telex receive a net sum of $237.6 million from IBM.

Christensen ordered IBM to pay Telex $259.5 million and fined Telex $21.9 million for theft of trade secrets. Decision on the appeal from the Tenth Circuit Court of Appeals is expected soon.

In the year ended March 31, Telex lost $23.3 million compared with $13.4 million a year ago. The pretax loss totaled $32.3 million compared with $18 million last year.

Revenues, however, climbed to $89.7 million from $68.1 million last year, topping those of 1971 when the firm earned $5.5 million on revenues of $81.5 million.

Although sales to leasing companies were down, lease rental income of peripherals totaled $23.1 million compared with $12.5 million in 1973.

"This increase represents the effect of the increasing equipment population to which the company retained ownership as the result of the reduced level of sales to leasing companies," the firm stated.

The loss from European operations was less this year than last, $4.4 million compared with $4.6 million in 1973.

In June Telex restructured its domestic and European long term secured indebtedness, with payments scheduled from July 31, 1974 to Dec. 31, 1976.

Earnings Reports

COMPUTER TRANSCEIVER SYSTEMS
Year Ended Feb. 28

	1974	1973
Shr Ernd	$.40	$.14
Revenue	3,988,732	2,657,098
Earnings	362,393	119,463

IPS COMPUTER MARKETING
Six Months Ended Feb. 28

	1974	1973
Shr Ernd	.....	$.25
Revenue	4,203,296	4,871,388
Earnings	(31,326)	122,534

COMPUTER CONSOLES
Three Months Ended March 31

	1974	1973
Shr Ernd	$.26	.....
Revenue	1,967,865	$729,189
Tax Cred	220,000	.....
Earnings	439,360	(74,902)

ADVANCED SYSTEMS
Year Ended March 31

	1974	1973
Shr Ernd	$.23	$.02
Revenue	5,570,000	3,414,000
Earnings	240,870	18,000

STANDARD REGISTER
Three Months Ended March 31

	1974	1973
Shr Ernd	$1.05	$.47
Revenue	37,553,083	29,100,985
Earnings	2,261,380	1,005,436

CONTROL DATA
Three Months Ended June 30

	1974	1973
Shr Ernd	$.72	$.95
Revenue	283,310,000	231,265,000
Spec Cred	227,000	127,000
Earnings	11,862,000	15,615,000
6 Mo Shr	1.63	1.98
Revenue	532,730,000	436,335,000
Spec Cred	500,000	401,000
Earnings	26,706,000	32,340,000

WILTEK
Three Months Ended April 30

	1974	1973
Shr Ernd	$.08	$.04
Revenue	4,391,000	2,744,000
Earnings	100,000	61,000
6 Mo Shr	.18	.07
Revenue	8,134,000	4,728,000
Earnings	242,000	99,000

NATIONAL DATA
Year Ended May 31

	1974	1973
Shr Ernd	$.26	$.38
Revenue	31,745,248	16,286,629
Tax Cred	.....	321,600
Earnings	1,364,238	1,884,041

TELEX
Year Ended March 31

	1974	1973
Revenues	$89,743,000	$68,131,000
Loss	23,332,000	13,371,000

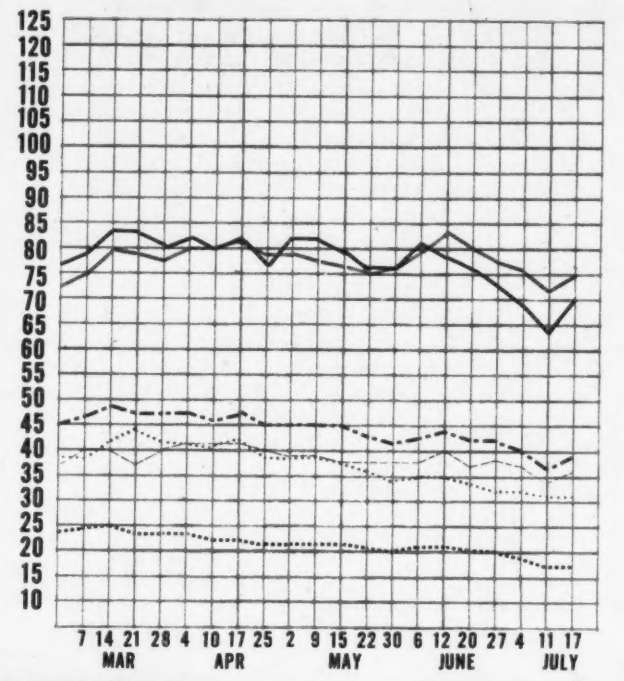
ON-LINE SYSTEMS
Year Ended April 30

	1974	1973
Shr Ernd	$1.92	$.87
Revenue	9,896,428	6,303,146
Earnings	1,567,647	692,979
3 Mo Shr	.60	.29
Revenue	3,037,131	1,752,541
Earnings	496,464	236,969

MICRODATA
Three Months Ended May 31

	1974	1973
Shr Ernd	$.23	$.03
Revenue	3,848,247	2,303,619
Tax Cred	173,700	26,000
Earnings	361,900	53,327
9 Mo Shr	.57	.37
Revenue	9,566,494	6,536,106
Tax Cred	431,500	271,000
Earnings	912,400	575,892

COMPUTERWORLD Computer Stocks Trading Indexes



TRADE*QUOTES

Computerworld Stock Trading Summary

All statistics compiled, computed and formatted by TRADE*QUOTES, INC. Cambridge, Mass. 02139

EXCH		1973-74 RANGE (1)	CLOSE JUL 17 1974	WEEK NET CHNGE	WEEK PCT CHNGE
	COMPUTER SYSTEMS				
N	BURROUGHS CORP	49-126	97 1/4	+8 3/8	+9.4
N	COLLINS RADIO	16- 26	24 3/4	0	0.0
O	COMPUTER AUTOMATION	5- 20	11 1/2	+2 1/8	+22.6
N	CONTROL DATA CORP	20- 62	22 7/8	+3 3/8	+17.3
N	DATA GENERAL CORP	26- 49	30 1/8	+2 1/2	+9.0
O	DATAPOINT CORP	9- 21	11 1/4	+2	+21.6
O	DIGITAL COMP CONTROL	2- 6	2	+ 1/8	+6.6
N	DIGITAL EQUIPMENT	73-121	103 5/8	+8 5/8	+9.0
N	ELECTRONIC ASSOC.	2- 9	2	0	0.0
A	ELECTRONIC ENGINEER.	6- 14	7 7/8	+1	+14.5
N	FOXBORO	23- 48	26 3/4	+ 3/4	+2.8
O	GENERAL AUTOMATION	22- 55	33	+3 3/4	+12.8
O	GRI COMPUTER CORP	1- 3	5/8	- 1/8	-16.6
N	HEWLETT-PACKARD CO	70- 99	80 1/4	+5 3/4	+7.7
N	HONEYWELL INC	55-139	56	+1 1/4	+2.2
N	IBM	198-340	217 3/4	+19	+9.5
O	INTERDATA INC	7- 22	17	+3 3/4	+28.3
O	MICRODATA CORP	2- 10	3 7/8	+ 1/2	+14.8
N	NCR	27- 46	32 1/4	+3 3/4	+13.1
N	RAYTHEON CO	22- 39	29 1/4	+2 1/4	+8.3
N	SINGER CO	28- 74	28 1/4	- 1/2	-1.7
N	SPERRY RAND	34- 56	37 1/4	+3 1/2	+10.3
A	SYSTEMS ENG. LABS	1- 8	1 1/2	+ 1/4	+20.0
N	TEXAS INSTRUMENTS	83-138	91 1/2	+7 3/8	+8.7
O	ULTIMACC SYSTEMS INC	1- 11	1 3/4	0	0.0
N	VARIAN ASSOCIATES	7- 20	8 1/2	+1 1/2	+21.4
N	WANG LABS.	10- 34	11 3/4	+1 5/8	+16.0
N	XEROX CORP	100-169	107 3/4	+6 1/8	+6.0
	LEASING COMPANIES				
A	BOOTHE COMPUTER	1- 5	1 1/8	0	0.0
O	BRESNAHAN COMP.	1- 2	2 1/8	0	0.0
O	COMDISCO INC	2- 17	3	- 1/4	-7.6
A	COMMERCE GROUP CORP	3- 6	3 1/8	+ 1/4	+8.6
O	COMPUTER EXCHANGE	1- 1	1/8	0	0.0
A	COMPUTER INVSTRS GRP	1- 8	1 1/4	0	0.0
O	COMP. INSTALLATIONS	1- 2	1	0	0.0
M	DATRONIC RENTAL	1- 3	3/4	- 1/8	-14.2
A	DCL INC	0- 3	3/8	-	-14.3
N	DPF INC	3- 9	2 7/8	+ 1/8	+4.5
O	EDP RESOURCES	1- 3	3 1/4	0	0.0
A	GRANITE MGT	1- 6	2	0	0.0
A	GREYHOUND COMPUTER	3- 6	3 1/4	- 1/8	-3.7
A	ITEL	4- 12	4	+ 1/2	+14.2
N	LEASCO CORP	8- 18	8 3/4	+ 1/4	+2.9
O	LEASPAC CORP	1- 8	1	0	0.0
O	LECTRO MGT INC	1- 2	1/4	0	0.0
O	NRG INC	2- 15	2 1/2	+ 1/8	+5.2
A	PIONEER TEX CORP	2- 10	2 5/8	0	0.0
A	ROCKWOOD COMPUTER	1- 3	3/4	+ 1/8	+30.0
N	U.S. LEASING	11- 36	10 3/4	+ 1/4	+2.3
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 2	1	0	0.0
A	APPLIED DATA RES.	2- 4	1 3/4	- 1/8	-6.6
O	APPLIED LOGIC	1- 3	1/8	0	0.0
N	AUTOMATIC DATA PROC	21- 94	26	+5	+23.8
O	BRANDON APPLIED SYST	1- 1	1/2	0	0.0
O	CENTRAL DATA SYSTEMS	3- 9	4 1/4	0	0.0
O	COMPUTER DIMENSIONS	1- 5	1 1/2	0	0.0
O	COMPUTER HORIZONS	1- 6	1 1/2	0	0.0
O	COMPUTER NETWORK	1- 5	1 1/8	+ 1/8	+12.5
N	COMPUTER SCIENCES	2- 6	2 3/4	+ 1/4	+10.0
O	COMPUTER TASK GROUP	1- 2	1/2	0	0.0
O	COMPUTER TECHNOLOGY	1- 3	1/2	0	0.0
O	COMPUTER USAGE	2- 9	2 3/8	0	0.0
O	COMRESS	1- 2	3/8	+ 1/8	+50.0
O	COMSHARE	2- 9	2 3/4	0	0.0
N	CORDURA CORP	2- 15	2 3/8	- 1/8	-5.0
O	DATATAB	1- 4	1 1/2	- 1/8	-7.6
A	ELECT COMP PROG	1- 2	1/4	+ 1/8	+100.0
N	ELECTRONIC DATA SYS.	12- 56	16 1/4	+2 7/8	+21.4
O	INFONATIONAL INC	1- 2	1/2	0	0.0
O	I.O.A. DATA CORP	1- 1	3/8	0	0.0
O	IPS COMPUTER MARKET.	1- 5	3/4	0	0.0
O	KEANE ASSOCIATES	2- 5	2 3/4	0	0.0
O	KEYDATA CORP	2- 12	2 1/8	+ 1/4	+13.3
O	LOGICON	2- 7	3 1/2	+ 3/8	+12.0
A	MANAGEMENT DATA	1- 5	1 5/8	+ 1/4	+18.1
O	NATIONAL CSS INC	14- 42	16	0	0.0
O	NATIONAL COMPUTER CO	1- 1	1/4	0	0.0
O	NATIONAL INFO SRVCS	1- 2	1/8	0	0.0
A	ON LINE SYSTEMS INC	12- 31	25 1/4	+2 1/4	+9.7
N	PLANNING RESEARCH	2- 7	2 3/8	+ 1/4	+11.7
O	PROGRAMMING METHODS	17- 25	17	0	0.0
O	PROGRAMMING & SYS	1- 1	5/8	- 1/8	-16.6
O	RAPIDATA INC	2- 24	2 1/8	- 1/4	-10.5
O	SCIENTIFIC COMPUTERS	1- 3	5/8	0	0.0
O	SIMPLICITY COMPUTER	1- 4	3/4	0	0.0
O	TCC INC	1- 1	1/4	0	0.0
O	TYMSHARE INC	6- 13	10	+1 1/2	+17.6
O	UNITED DATA CENTER	2- 6	2	0	0.0
A	URS SYSTEMS	2- 8	2	+ 1/8	+6.6
N	WYLY CORP	3- 11	2 7/8	+ 1/8	+4.5
	PERIPHERALS & SUBSYSTEMS				
N	ADDRESSOGRAPH-MULT	5- 34	5 1/8	+ 1/2	+10.8
O	ADVANCED MEMORY SYS	3- 23	2 3/4	+ 1/4	+10.0
N	AMPEX CORP	3- 7	2 7/8	- 1/8	-4.1
O	ANDERSON JACOBSON	2- 6	2	- 1/4	-11.1
O	BEEHIVE MEDICAL ELEC	3- 10	2 1/2	- 1/4	-9.0
A	BOLT+BERANEK & NEW	6- 12	6 7/8	0	0.0
N	BUNKER-RAMO	5- 18	5 5/8	+ 3/8	+7.1
A	CALCOMP	5- 16	7 7/8	+ 5/8	+8.6
O	CAMBRIDGE MEMORIES	7- 17	7 7/8	+ 5/8	+8.6
O	CENTRONICS DATA COMP	13- 38	15 1/2	+1 3/4	+12.7
O	CODEX CORP	8- 19	10 1/4	+2	+24.2
O	COGNITRONICS	1- 3	7/8	0	0.0
O	COMPUTER COMMUN.	1- 4	1/2	- 1/8	-20.0
A	COMPUTER EQUIPMENT	1- 3	1 3/8	+ 1/8	+10.0
O	COMPUTER MACHINERY	2- 13	3 1/8	+ 3/4	+31.5
O	COMPUTER TRANSCEIVER	1- 6	1 1/8	- 1/8	-10.0
N	CONRAC CORP	13- 32	13 5/8	+ 7/8	+6.8
O	DATA ACCESS SYSTEMS	1- 3	2 1/2	0	0.0
O	DATA 100	7- 19	8 7/8	+2	+29.0
A	DATA PRODUCTS CORP	2- 5	3 1/2	+ 5/8	+21.7
O	DATA RECOGNITION	1- 3	1/4	0	0.0
O	DATA TECHNOLOGY	1- 5	2 1/2	+ 1/4	+11.1
O	DECISION DATA COMPUT	4- 40	5 3/4	+1	+21.0
O	DELTA DATA SYSTEMS	1- 1	3/4	+ 1/4	+50.0
O	DIVAN CONTROLS	1- 4	1/2	0	0.0
N	ELECTRONIC M & M	2- 6	2 1/8	+ 1/8	+6.2
O	FABRI-TEK	2- 5	1 7/8	+ 1/4	+15.3
O	GENERAL COMPUTER SYS	2- 9	2	0	0.0
N	GENERAL ELECTRIC	45- 76	47 3/4	+2 7/8	+6.4
N	HAZELTINE CORP	4- 9	4	0	0.0
O	INFOREX INC	2- 23	3 3/8	+ 1/2	+17.3
O	INFORMATION DISPLAYS	1- 2	1/8	- 1/8	-50.0
O	INFORMATION INTL INC	8- 15	8 3/4	+ 1/4	+2.9
A	LUNDY ELECTRONICS	3- 9	2 7/8	0	0.0
O	MANAGEMENT ASSIST	1- 1	1/8	- 1/8	-50.0
N	MEMOREX	2- 19	3 7/8	- 1/8	-3.1
A	MILGO ELECTRONICS	9- 28	10 3/8	+ 3/8	+3.7
N	MOHAWK DATA SCI	2- 13	2 1/4	+ 3/8	+20.0
O	ONEC COMPUTER SYST.	2- 6	1 1/2	0	0.0
O	OPTICAL SCANNING	2- 8	3	- 1/2	-14.2
O	PERTEC CORP	3- 8	2 3/4	- 1/8	-4.3
O	PHOTON	3- 7	3 3/4	0	0.0
A	POTTER INSTRUMENT	2- 9	2 3/8	- 1/4	-9.5
O	PRECISION INST.	2- 6	1 1/4	0	0.0
O	QUANTOR CORP	4- 10	3 3/4	+ 1/4	+7.1
O	RECOGNITION EQUIP	2- 8	2 3/4	+ 1/4	+10.0
N	SANDERS ASSOCIATES	3- 18	3 5/8	+ 1/8	+3.5
O	SCAN DATA	1- 6	1 1/4	0	0.0
O	STORAGE TECHNOLOGY	9- 34	10 1/8	+1	+10.9
O	SYCOR INC	7- 20	7 3/4	+ 3/4	+10.7
O	TALLY CORP.	2- 14	2 1/4	+ 1/8	+5.8
O	TEC INC	4- 9	3 1/2	0	0.0
N	TEKTRONIX INC	30- 55	33 1/2	-3 1/2	-9.4
N	TELEX	3- 8	3	+ 3/8	+14.2
O	WANGCO INC	7- 13	8 3/8	+1	+13.5
O	WILTEK INC	3- 18	3	- 3/4	-20.0
	SUPPLIES & ACCESSORIES				
O	BALTIMORE BUS FORMS	4- 9	4 1/2	+ 1/4	+5.8
A	BARRY WRIGHT	5- 13	5	0	0.0
O	CYBERNATICS INC	1- 3	1 1/4	0	0.0
A	DATA DOCUMENTS	17- 54	47 1/2	+5 1/4	+12.4
O	DUPLEX PRODUCTS INC	6- 17	14 3/4	+1 3/4	+13.4
N	ENNIS BUS. FORMS	5- 8	5 5/8	+ 1/8	+2.2
O	GRAHAM MAGNETICS	6- 20	7 1/4	+ 3/4	+11.5
O	GRAPHIC CONTROLS	7- 12	9	+ 1/4	+2.8
N	3M COMPANY	68- 91	71 1/2	+2	+2.8
O	MOORE CORP LTD	48- 65	51	+2 1/2	+5.1
N	NASHUA CORP	32- 58	36 1/4	+ 3/8	+1.0
O	REYNOLDS & REYNOLD	17- 51	20 1/2	+4	+24.2
O	STANDARD REGISTER	11- 20	13 1/4	0	0.0
O	TAB PRODUCTS CO	6- 23	5 3/4	0	0.0
N	UARCO	15- 23	19 1/2	+ 1/2	+2.6
A	WABASH MAGNETICS	5- 8	4 3/4	+ 1/8	+2.7
N	WALLACE BUS FORMS	14- 26	19 3/8	0	0.0

EXCH: N=NEW YORK; A=AMERICAN; P=PHIL-BALT-WASH
L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

CIG's Block Multiplexer Channel: It gives your 360/65 a big appetite for data.

Just like the 370/168.

The IBM 370 model 168 has the most powerful I/O setup in the 370 series. There's no real reason why the 360/65 or 67 user shouldn't take advantage of it. So CIG built a Block Multiplexer Channel just like the IBM 2880. It plugs right into your 360 without any hardware or software changes.

Once you've got our Channel, you string any combination of 3330 disk drives, control units and switches behind it. Mix and match single density, double density, 3330 compatible from Ampex, Telex, CDC, Calcomp, STC, and Itel. We've tried them all. If it works on the 168, it now works on your 65. You can even share a common 3330 data base between your 360 and 370 systems.

CIG

CIG COMPUTER PRODUCTS, INC.

A Subsidiary of Computer Investors Group, Inc.

1351 Washington Blvd., Stamford Conn, 06902

Dear CIG:

☐ Send me all the info on the CIG 6780.

☐ Send details on CIG Add-on Memory for the 360/_____, 370/_____.

Name_____Title_____

Company_____

Street_____

City_____State_____Zip_____

CW: 724

Up to 8-times the thruput.

If you're still using 2314's or 3330's attached to a 2860 with modified software, you're in for a big surprise when you plug in our Channel. Because your 65 is going to start swallowing data exactly like a 370/168.

That means up to 8-times more thruput under heavy loads. (Who says so? IBM. Right in their Systems Research Journal. Write and ask us for a copy.)

What's more, you get all the benefits of increased capacity, smaller size, lower cost-per-bit and faster data rates that only 3330's can give you.

But what really makes your system turn on is RPS (Rotational Position Sensing). And IBM put full RPS and 3330 support in OS release 21.6 and beyond. So you don't have to change your software to use our hardware.

Have we got references!

Users who know the score have been running the CIG 6780 channel for months, and we're shipping more every day. So if you'd like to find out how our blue-chip customers – over a dozen of them – increase the appetites of their 65's and 67's with CIG's channel, write and we'll tell you who to call.

We've got memory, too.

If you really want a hungrier 65, plug in up to 4 megabytes of CIG high-speed Main Memory in combination with the CIG 6780 Channel. Then you'll have a system that'll digest more data than 370/155's or 158's. Especially those running VS.

We'll lease you the whole bundle, too. CPU. Memory. Channels. Peripherals. Everything. At a rate that'll whet your controller's appetite. So check us out and call us in.